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Increased consumer demand for general outpatient services at Fitzsimons Army Medical Center exceeded the supply of available appointments. Thus, a retrospective examination of the General Outpatient Clinic's Walk-In, Centralized, and Decentralized Patient Appointment Systems was performed. Measurements of tangible costs, physician productivity, physician and telephone operator opinions, and patient perceptions revealed the optimal System to be the Decentralized System. Additional costs required to install the Decentralized System proved insignificant, physician workload increased, and quality of care was enhanced. Both physicians, operators, and patients perceived the Decentralized System as the superior patient appointment system.

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A STUDY TO DETERMINE THE OPTIMAL PATIENT APPOINTMENT SYSTEM FOR THE FITZSIMONS ARMY MEDICAL CENTER OUTPATIENT CLINIC

A Graduate Research Project
Submitted to the Faculty of
Baylor University
in Fulfillment of the
Requirements for the Degree

of

Master of Health Administration

by

Captain Susan Wong Bean, MS

June 1988

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INTRODUCTION

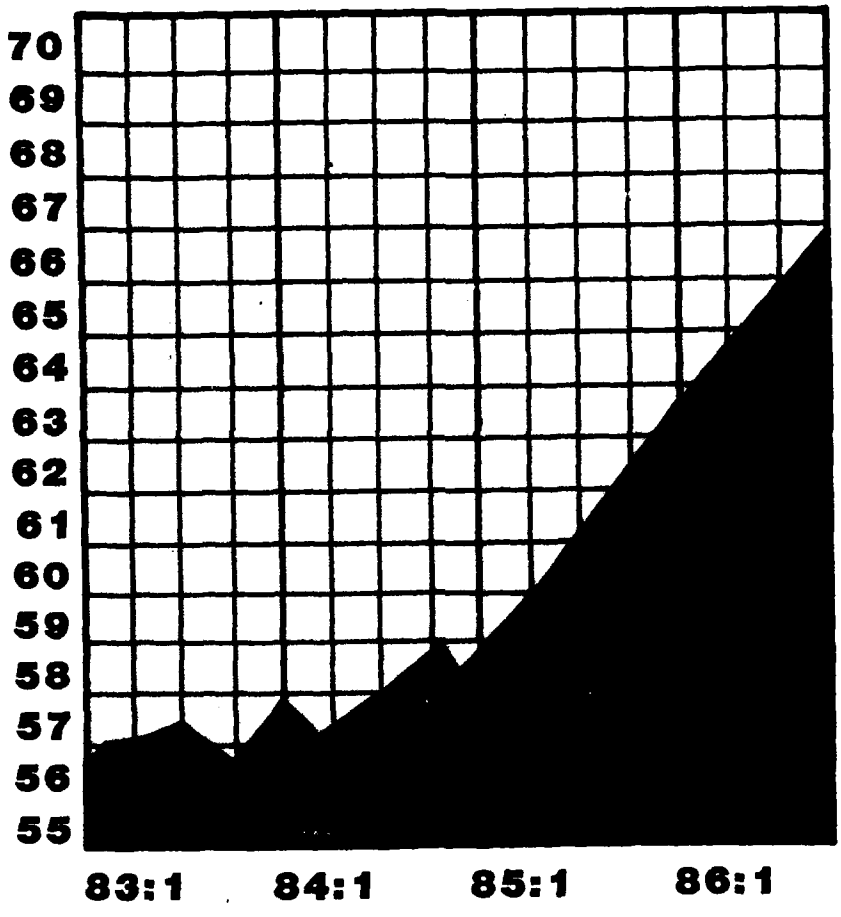
Introduction of the prospective payment system in 1983 stimulated a rapid escalation in the provision of outpatient services. The literature reveals that outpatient health care revenues account for ten to thirty percent of total hospital income and by 1989 this percentage is expected to be exceeded (Newald, 100). In 1986 outpatient clinical visits experienced a growth rate of more than twice the number of visits recorded in 1985 (See Fig. 1, page 2) (Gallivan, 34).

The shift of civilian health care administrator's attention to outpatient services could be largely attributed to reimbursement based on Diagnosis Related Groups (DRGs), increased inpatient utilization monitoring by Peer Review Organizations (PROs), and the emphasis on containing rising health care costs. Traditionally, outpatient health care was only a minor component of hospital operations. However, economic realities of the competitive health care market have jolted hospital executives into recognizing ambulatory care as an important revenue source. Clinics operating at less than optimal efficiency rates have been challenged to maximize overall efficiency (Cupit, 140). The growing volume and case mix intensity of outpatient services mandates that all resources in ambulatory care areas be be critically analyzed and allocated (Hoffman, et. al., 23).

Figure 1

Outpatient visits, seasonally adjusted

(in millions)



Calendar quarters

Source: National Hospital Panel Survey, AHA, 1986

As the provision of outpatient health care services has increased, patient dissatisfaction with the services has concurrently increased. In one study, twenty-one percent of the outpatient population expressed dissatisfaction with the health care system, versus only seven percent of admitted patients who were not satisfied with the inpatient system (Jones, 152). Results of the study attributed a large portion of the discontent to outpatient appointment systems (Jones, 154). As consumer demand for ambulatory care proliferates, access to the system often becomes a problem if the availability of the services in demand is not simultaneously increased. Unless appointment systems possess the personnel and equipment to efficiently manage demand growth, customers can be expected to experience great frustrations in attempting to gain access to the patient appointment system.

Unlike many manufacturing industries, health care operations cannot always maintain a finished goods inventory (Ittig, 425). Medical services can only be provided to customers upon demand--not in advance. It is difficult to anticipate consumer needs and stockpile medical advice, surgical procedures, completed telephone calls, or completed financial transactions. These items cannot be stored and subsequently provided to customers as needed on a demand basis. In most cases, appointments must be scheduled and caregivers must be available to provide for customers'

requests. A production industry can store a finished goods inventory which provides a buffer stock, however, service industries lack this buffer. Thus, health services are produced and consumed simultaneously and providers are not always capable of providing services at the specified rate of demand (Cupit, 140). Additionally, demand will almost always exceed the provision rate for services and products which customers do not directly pay; economic realism prevents the supply and demand of this type of medical care to be provided at an optimal rate to appease the entire patient population.

CONDITIONS PROMPTING THE STUDY

The General Outpatient Clinic at Fitzsimons Army Medical Center (FAMC) in Aurora, Colorado, provides primary health care to patients, and physicians in this Clinic are the "gatekeepers" to more specialized care. As almost all patients must be treated at the General Outpatient Clinic prior to attaining an appointment with specialists, this Clinic is a prime example of an overloaded system.

A large proportion of FAMC's General Outpatient Clinic patients are comprised of an elderly population with chronic problems, such as diabetes and hypertension. Many patients frequently seek appointments throughout the year. While it is not feasible to increase the number of health care providers in the Clinic, innovative alternative methods to improve access to care should be considered. Thus, the appointment system was reexamined to determine the optimal method of scheduling patients.

Numerous studies on different patient appointment systems have been conducted. However, results have always been the same; researchers agree that each institution is unique and the ideal system for each health care facility must be based on the institution's mission and demographic variables, such as the patient population and geographic location. Nevertheless, an appropriate appointment system is imperative to maximize staff productivity, minimize queueing, and to space patients comfortably throughout the clinic day (Cupit, 145).

WALK-IN FAMC PATIENT APPOINTMENT SYSTEM

Prior to 18 May 1987, the General Outpatient Clinic at FAMC operated for the most part, on a "walk-in" basis. Although some appointments were scheduled, approximately 75% of all patients were seen through the walk-in system. Hours of operation were from 0700 to 1630 hours. As expected, given the high patient load, problems with this system were often overwhelming. In the attempt to be treated early, patients began queueing at the General Outpatient Clinic door as early as 0600. By 0700 hours there were so many patients waiting to be treated that people arriving at 0730 had to wait for two to three hours. Therefore, patients had to endure hours of idle time before being treated. Meanwhile, the waiting area's capacity was maximized, thus, creating a very unappealing, crowded and uncomfortable environment. The backlog of patients was so great that persons arriving in the

afternoon often discovered they could not be treated that day and were advised to return early the following morning.

CENTRALIZED FAMC PATIENT APPOINTMENT SYSTEM

The General Outpatient Clinic recently underwent a major operational change. On 18 May 1987 FAMC switched to the computerized Veterans Administration Delivery Health Care Program (VA DHCP) Centralized Patient Appointment System (CPAS). Centralized Patient Appointment Systems utilize a pool of Central Patient Appointment System employees to schedule all patient appointments in a consolidated area. With the exception of active duty service members, all medical beneficiaries called Central Appointments between 1300 hours through 1600 hours to obtain an appointment. Appointments were scheduled no more than 72 hours in advance.

The major problem with the CPAS arrangement was access to the system. Beginning at 1300 hours all twelve of CPAS's telephone lines were constantly engaged--barraged with callers attempting to attain an appointment. As a result, virtually all appointments were filled by 1500 hours. After this time the only option patients had was to call again the following day. It was believed that many potential patients never did gain access to the CPAS. The number of customers unable to secure an appointment with the General Outpatient Clinic as a result of constant busy signals was never determined. However, the number of complaints pertaining

to access to the CPAS received by the Patient Representative verified that a problem did indeed exist. The amount of time operators were on the phone with customers was minimal; CPAS operators currently spent approximately one minute to schedule patients for treatment at the General Outpatient Clinic.

In the attempt to improve efficiency and effectiveness of the General Outpatient Clinic Patient Appointment System, FAMC decided to convert patient scheduling to a decentralized appointment system. Decentralized patient appointment systems utilize individual clinic personnel to schedule appointments for specific clinics. The determination to convert to the decentralized patient appointment system was based on the belief that the conversion would be both cost-effective and improve patient satisfaction of the appointment system. Whether it improved productivity depended on how the new system was used to schedule patients.

DECENTRALIZED PATIENT APPOINTMENT SYSTEM

The conversion to a Decentralized Patient Appointment System (DPAS) necessitated the purchase of a two channel, DACON Automatic Call Sequencer Device Model 46. Automatic sequencing devices evenly distribute calls to the appointment desk where they are answered on a first-come, first-served basis. Automatic recordings can be taped to provide patients with information about the clinic, and can also request that

the patient have certain information available, thus minimizing time spent on the phone. Problems which have been noted with the use of automatic sequencing devices include equipment problems which result in disconnections, and the initial impersonal nature of communications (Goldstein, 8). The FAMC contract for the DACON automatic sequencer includes a two hour repair response time by the contractor if the machine should fail. The Sequencer is capable of holding six calls in queue while two lines are active.

In addition to the sequencer, a separate trunk line for the General Outpatient Clinic was installed and two GS-4 phone operators were hired. It was estimated that operators who had never worked with a computer would require about one week of training before they could effectively manage the General Outpatient Clinic DPAS. Since the DPAS was to be locally situated in the General Outpatient Clinic additional physical space in the General Outpatient Clinic was allocated. Initial implementation of the DPAS began on 30 November 1987.

Adoption of the DPAS in the General Outpatient Clinic was expected to enhance patient satisfaction by improving accessibility to the System. Patients were not expected to compete with specialty clinic customers for telephone lines to the Central Patient Appointment System; operators would be totally devoted to General Outpatient Clinic patients, and

the lines would be open to General Outpatient Clinic customers twice as long as previously.

Although the number of providers would not be increased, conversion to the DPAS was expected to increase the number of available scheduled appointments. Direct control of the appointment operators would allow for greater flexibility in scheduling patients. Since the operators would be physically located in the General Outpatient Clinic, physicians would have easy access to the system and would be able to schedule follow-up appointments according to the time they required with a patient. Besides improved patient satisfaction and an increased number of available appointments, the decentralized system would provide closer monitoring and a more rapid response to problems pertaining to the Patient Appointment System.

GENERAL INFORMATION ABOUT FAMC's GENERAL OUTPATIENT CLINIC

Including the Chief of the Department of Primary Care and Community Medicine and the Chief of the General Outpatient Clinic, nine physicians are employed to treat patients at the General Outpatient Clinic. All physicians, with the exception of a designated Medical Officer of the Day are scheduled by the Patient Appointment System (PAS) to treat outpatients with appointments and perform military sick call. Physicians performed Medical Officer of the Day duties

on a rotating basis. The Medical Officer of the Day is available to see patients requesting refills for prescriptions, assists other physicians when backlogs of patients occurr, and treats all active duty service members on a walk-in basis.

The number of total appointments is based on available physicians. Although the number of appointments steadily increased during a sample quarter (965 available appointments in March 1987 to 1,245 appointments in May 1987), the number of requests for appointments also rose. In comparison to FAMC's active demand for ambulatory care, augmentation of the number of providers remained virtually unchanged. Coincident with the General Outpatient Clinic's conversion in May 1987 to the CPAS, the Emergency Room has experienced an average workload increase of about seventeen patients per day.

Hours of operation for the General Outpatient Clinic are from 0700 to 1630. Non-active duty patients are scheduled for fifteen minute appointments throughout the day. Sick call hours are from 0730 to 0830, and active duty service members are also treated on a walk-in basis throughout the day. As expected with such a small active duty population, active duty service members and their dependents comprise only a small portion of the General Outpatient Clinic patient population. Physicians devote the majority of their treatment time with dependents and retirees; only a small portion of their time is spent with active duty persons. Many of the patients seen at the General Outpatient Clinic are provided

referrals to specialty or subspecialty clinics at FAMC.

CONDITIONS PROMPTING THE STUDY

Fitzsimons Army Medical Center is not unlike most other military medical treatment facilities; patients were experiencing increased difficulty in accessing primary ambulatory care facilities. When FAMC's General Outpatient Clinic converted from the walk-in system to the Central Patient Appointment System it was believed that queues in the General Outpatient Clinic would be vastly reduced and efficiency would be achieved in that more patients could be treated. Indeed, patient idle time in the General Outpatient Clinic did decrease. However, the number of complaints received by the Patient Representative pertaining to General Outpatient Clinic accessibility problems concurrently increased. Because it was difficult to access the Central Patient Appointment System to attain an appointment, customers believed that operations under the Central Patient Appointment System resulted in fewer patients being treated.

The walk-in and centralized Patient Appointment Systems had not proven to be the optimal system for the General Outpatient Clinic, and the DPAS was provided an opportunity to prove itself. It was also quite possible that a combination of any of the aforementioned Patient Appointment Systems could have been the superlative system for FAMC's General Outpatient Clinic. The purpose of this study was to determine which Patient Appointment System is most suitable for FAMC's patients and health care providers.

STATEMENT OF THE PROBLEM

To determine the optimal patient appointment system for the Fitzsimons Army Medical Center General Outpatient Clinic.

OBJECTIVES

1. Reviewed current literature pertaining to patient appointment systems.
2. Reviewed applicable regulations, standard operating procedures, and policies.
3. Reviewed General Outpatient Clinic patient workload statistics.
4. Reviewed Emergency Room patient workload statistics.
5. Via a structured interview, determined General Outpatient Clinic health provider opinions of the different systems.
6. Via health provider opinions obtained through a structured interview, determined changes in the quality of care provided to General Outpatient Clinic patients.
7. Via a structured interview, determined Patient Appointment System employees' perceptions of the different systems.
8. Using measurements of manpower, physical space, and expenses, conducted a cost efficiency analysis comparing the new decentralized patient appointment system with the former centralized system.

9. Measured changes in the General Outpatient Clinic patient workload after conversion to the Decentralized Patient Appointment System.

10. Measured changes in the Emergency Room patient workload after conversion to the Decentralized Patient Appointment System.

12. Surveyed eligible military medical beneficiaries to determine their preference and level of satisfaction with the Centralized Patient Appointment System versus Decentralized Patient Appointment System.

13. Developed recommendations for the optimal Patient Appointment System.

CRITERIA

1. The sample patient population was derived equally from General Outpatient Clinic and Emergency Room patients.

2. Final evaluation of questionnaires included surveys from each target sample population subgroup in both the Emergency Room and General Outpatient Clinic. Subgroups included:

   a. Active Duty Dependents
   b. Retirees
   c. Retiree Dependents

3. Patient surveys were administered to the targeted population for a period of two weeks.

4. The minimum number of respondents required to determine reliable differences between the subgroups and response categories was determined based on the response variability in the trial validation survey. Initially, a minimum of twenty surveys from each subgroup were collected to be evaluated for differentiation.

The alpha level of statistical significance was set at .05.

5. Final recommendation complied with Department of Defense, Army, Health Services Command regulations, and FAMC policies, and law.

ASSUMPTIONS

1. The mission of FAMC would remain unchanged.
2. Policies regarding eligible beneficiaries and patient priorities would remain essentially unchanged (e.g. active duty soldiers would continue to be treated during sick call and on a walk-in basis).
3. The patient demand rate for appointments at the General Outpatient Clinic would continue to gradually increase so that it did not skew data.
4. The surveyed sample population would be representative of FAMC General Outpatient Clinic beneficiaries.

LIMITATIONS

1. Decentralized, centralized, and walk-in FAMC General Outpatient Clinic Patient Appointment System operations could not be evaluated simultaneously since only one system was operational at any given time. Since evaluated data partially relied on patient's and provider's subjective memory regarding past patient appointment systems, bias could have been introduced into the results.
2. Patient workload statistics for the General Outpatient Clinic and Emergency Room were only collected from 1 November 1986 through 29 February 1988, thus data could have been skewed. This issue will be addressed later in the paper.

C H A P T E R I I

REVIEW OF LITERATURE

Introduction

In the past twenty years, patterns of demand for ambulatory health care services have changed drastically. The health care industry has finally entered the era of competition and consumerism. Passive administration no longer guarantees the survival of institutions; strategic planning and competitive marketing are vital elements of any successful health system.

Hospitals have made a complete circle in one century. In the 19th century, when health care was a charitable act, patients were willing to accept the consequences of poor medical care (Moxley and Roeder, 196). However, today medical care is not often provided free of charge, and patients desire a good "bedside manner" from providers. The public understands that health care is a profitable business--the era of charitable health care is gone. Paying patients of the 1980's perceive themselves as informed "consumers", and understand that they have a choice from whom they receive medical care (Peterson and Orlikoff, 55).

Patient attitudes of health care services are complex and multidimensional (Powers, 394). Consumers expect to be treated courteously and promptly and they demand better services. They desire few delays and through appointment

systems, they want easy access to health care ("Getting in Line", 891). When satisfied with health services, many patients will perceive the facility as efficient and worth the money spent. Satisfied customers will bring their business back to the same health facility and refer friends and family (Peterson and Orlikoff, 55). The result is increased revenues for the facility.

Patients usually enter the health care system through the Patient Appointment System (PAS). Thus, the PAS is an integral component of the public relations arena, because it provides patients with their first impression of the medical treatment facility.

Queueing

Patient satisfaction surveys often reveal excessive queues to be a major contributor to patient dissatisfaction. Within a competitive marketplace, customers in ambulatory health care facilities expect prompt appointments (Cupit, 140). It is for this reason, that in this era of consumerism, patient waiting time has emerged as another activity that has been carefully monitored and controlled.

Military health facilities operating both a general outpatient clinic and an emergency department frequently evidence non-acute patients seeking primary care in their emergency department. The difficulty of attaining an appointment at the outpatient clinic compels some patients to

solicit prompt care from the emergency department. Thus, the provision of medical care to more acute patients can be delayed, causing lengthy queues in the emergency department. According to Smeltzer, et. al., unduly long waiting times in emergency rooms can delay the initiation of needed "true" emergency care. Patient satisfaction questionnaires have also substantiated that extended queues damage the public image of the emergency department, as well as the entire hospital (380).

In their attempts to minimize patient complaints, the guidelines of the Institute of Medicine recommends that ninety percent of all scheduled patients should be seen by a physician within thirty minutes of their assigned time (O'Malley, et. al., 20). Waiting times have been studied in-depth; however, only recently has it been applied to outpatient clinic management (Cupit, 140).

Results of a national survey revealed that ambulatory clinics should establish a goal for seventy-five percent of all patients being seen within thirty minutes of their scheduled appointment ("Getting in Line, 890). Furthermore, less than three percent of all patients should ever have to wait for more than an hour (Westman, et. al., 39). Spendlove, et. al. reported that the amount of time patients waited to be seen was positively related to the number of hostile adjectives noted on the survey (202).

Measurements of clinic efficiency often utilize waiting times as a parameter in studies (Westman, et. al., 35). According to Cupit, an appropriate appointment system can reduce patient queues and increase the availability of appointments (140).

Innovative Patient Appointment Systems

Appointment systems can improve efficiency of ambulatory care clinics by reducing patient waiting times and minimizing physician idle time (Stuart, 392). The demand for care and practicing physician population also contribute to patient queues, thus, appointment systems should not be viewed as the sole factor responsible for short waiting times. However, good systems can result in an awareness of obstacles to minimal queues (Westman, et. al., 39). For example, knowledge of physician consultation pace, types of patient complaints, and necessity of advance laboratory tests prior to appointments can reduce patient queues and improve efficiency (Westman, et. al., 39).

Optimal appointment systems should be developed with innovation and imagination, because once established, they can be the foundation upon which improved systems of medical care can be built. Furthermore, innovative appointment systems must be considered as potential methods of improving access to primary health care. Although the ideal outpatient setting will consist of staffing levels which are

commensurate with community and hospital needs (Singer, et. al., 158), it is rarely feasible nor economical to operate at such levels. Nevertheless, technology has assisted in paving the road for such ultimate systems.

It was only a decade ago that the majority of patient appointment systems were operated via manual methods. Individual clinics maintained appointments in schedule books and hand-wrote appointments, cancellations, and changes. Facilities experimenting with centralized systems positioned operators around a circular table. Appointment books for the various clinics were situated on a type of rotating "Lazy Susan". When calls were received by an operator, s/he accessed the desired appointment book by turning the entire circular shelf of books until the specified book was located (Stuart, 393). Appointments were then written into the book.

Prior to implementing a new appointment system, existing systems should be examined to determine the optimal system for the health facility. Today, large efficient appointment systems are automated. Computerization enables easy rearrangement of appointments and quicker responses to patient inquiries, simultaneously improving patient satisfaction and operator productivity ("Getting in Line", 891). The Bexar County Hospital in San Antonio, Texas was one of the first health facilities to adopt an automated appointment system (Guest, et. al., 9).

According to Guest, et. al. (8), Bexar County Hospital Central Patient Appointment System (BCH CPAS) was developed to provide on-line interface with other segments of the hospital information system. Ancillary support departments (i.e. radiology, laboratory) enter patient information into the system, which subsequently displays the patient's most recent exam/test result. This capability enables physicians to receive patient exam/test results with their appointment schedule. The integrated system also furnishes a patient appointment profile; information pertaining to the last outpatient visit date, and inpatient admission and discharge dates can be accessed. Current and future appointments are automatically exhibited, thus, enabling operators to verify appointments and answer queries regarding future appointments. As a result of the in-depth integration of the hospital information system applications, the BCH CPAS capabilities have been immensely enhanced (Guest, et. al., 8). In fact, authors of the article firmly believe that both operator and physician productivity has improved as a result of their automated CPAS (Guest, et. al., 8).

Computerization is only one method of increasing patient appointment system efficiency (PAS). In the attempt to decrease the number of telephone calls to PAS operators and to reduce the queue of patients making appointments, one hospital established a "Drop-Off" System. This System was

designed for patients who did not desire to use the telephone system, and had no preference for the day or time of an appointment (Singer, et. al., 156). Patients completed an appointment form by listing their address and telephone number, then deposited it in a designated box in the clinic (Singer, et. al., 156). Appointment slips were collected and scheduled by CPAS staff, and notice of appointments were then mailed to patients the following day (Singer, et. al., 156). Not only did this System reduce the telephone queue and workload on operators during peak hours, but it allowed PAS personnel to schedule "Drop-Off" appointments during slack time.

Of course, such a System would be most appealing to non-working and retired patients with flexible personal schedules. As a large proportion of FAMC's General Outpatient Clinic patronage is comprised of elderly retired persons, the "Drop-Off" System could vastly reduce the number of incoming calls to the PAS. However, to maintain patient satisfaction, the System requires that the demand for appointments be less than the number of available appointments. Otherwise, assignment of appointments would be inequitable; patients utilizing the System could possibly have a smaller probability of attaining an appointment.

Other developmental appointment systems health facilities have implemented have involved merging historical data from the appointment and registration systems (Guest,

et. al., 9). According to Guest, the automatic coalescence of data allows for analyses of patient show rates, appointment lead times and patient arrival rates (9). Thereafter, the aggregate information can be evaluated to determine where improvements in the appointment system can be made.

Patient Appointment System Problems

Numerous techniques and modes of technology exist to enhance patient appointment system operations, however, even the best scheduling systems must acknowledge extraneous variables which impede superior efficiency. Patients themselves, are often responsible for excessive waiting lines in inner-city health clinics (Cupit, 142).

Stirewalt, et. al. describes two extreme types of patient behavior which frequently create problems in the delivery of ambulatory care. The patient who fails to arrive for a scheduled appointment wastes resources because it results in the diminishment of the most cost-effective use of physician time (739). In a proprietary environment, such patients cause excessive slack time, which subsequently reduces the physician workload, and eventually results in decreased revenues. Health Maintenance Organizations, federal health institutions, and their patient population also suffer from such behavior. During the time a patient fails to show for a scheduled appointment, another patient could have been treated. Although this problem results from

undesired patient behavior, it is more evident in impersonal, disorganized clinics which experience long delays in their waiting rooms ("Getting in Line," 891).

The other extreme type of patient behavior which disrupts the efficient delivery and scheduling of ambulatory health care is the "drop-in" patient. Appearing unexpectedly, these patients overload the system, and such behavior can actually jeopardize the quality of services (Stirewalt, et. al., 739). In order for a physician to treat "drop-in" patients, s/he often is forced to reduce the time devoted with all patients. Stirewalt, et. al., discovered that the "drop-in" population indicated less satisfaction with the care received than patients who made appointments. Also, the "drop-ins" tended to demonstrate a history of high clinic utilization with repeated "drop-in" behavior patterns (739).

Unfortunately, the two aforementioned types of patient behavior seldom balance each other out; the "drop-in" patient does not usually appear when another patient fails to make a scheduled appointment (Stirewalt, et. al., 739). Cupit believes that even the best scheduling system will not work effectively if a large number of patients fail to keep appointments or walk in without appointments (142).

Internal problems can also encumber efficient scheduling of appointments. High personnel turnover rates is a problem that many appointment centers must acknowledge (Singer, et.

al., 158). Appointment clerk positions are entry level positions, and after employees qualify for a higher position, s/he normally moves up (Singer, et. al., 158). Another factor contributing to the high turnover rate, especially in a decentralized center, is the high pressure environment (Singer, et. al., 158). Appointment clerks employed in a clinic utilizing a decentralized appointment system must deal with patients in person and on the phone, and also meet staff demands. The result of such interactions can result in a stressful job, and many employees choose to change jobs as quickly as possible.

The problems mentioned above are experienced by most appointment systems, however, they should not be overlooked. The literature clearly demonstrates that the method used in scheduling outpatient appointments does indeed, affect the provision of health care (Singer, et. al, 151). Realization and understanding of such problems should focus attention to areas where problem areas can be improved to make a positive difference in the delivery of health care.

Implementation of New Appointment Systems

Once the decision has been made to change the mode of scheduling, extensive planning and preparation by hospital staff and patients is required (Cupit, 141). After determining the appropriate scheduling system, the idea must be sold to both customers and staff members (Cupit, 141).

Complete success of any system requires cooperation of the medical staff; for this reason, they should be involved in the planning process from the beginning (Singer, et. al., 155). Staff acceptance of a new system is very important; they need to thoroughly understand the mechanics of the new system. In addition, they should be made aware of how the system can improve overall efficiency and contribute to the clinic's long-term survival (Cupit, 141). Involvement by the staff during the planning process is essential, and even after the new system has been implemented, much support should be provided to the staff. Singer, et. al. believes that the medical staff should be offered a flexible structure that addresses their specific requirements for such things as the number and time allotted for new and follow-up patients, and the number of overbookings to schedule (155).

Patient education pertaining to the new system operations can be the most difficult task. Patients should be informed in advance of a proposed change, and information should be communicated about how the new system will work and implications of non-compliance (Cupit, 141). Regardless of the effort expended on educating the public about the new system, it should be expected that some patients will complain and even attempt to sabotage the new system (Cupit, 141). Therefore, the administrator's availability to deal

with such patients and provide explanations during the transition period is quite important (Cupit, 141).

Ideal appointment systems will be unique to each hospital, however, each should be developed to improve efficiency of the facility. Guest, et. al., (7) lists a few things that a good appointment system should do: (1) expedite handling of inquiries; (2) assure accurate and appropriate appointment scheduling; (3) provide the ability to accommodate clinic scheduling protocols considering dates, times and physician availability; (4) improve physician-patient continuity of care and promote physician-patient relationships; and (5) assist in the coordination of ancillary service information--specifically medical records and radiology films. Health Services Command (HSC Pam 40-7-1, 3) has set similar standard responsibilities for patient appointment system employees. It states that employees should: (1) match patients with providers, and insure the medical records section is notified so that the record will be available for pick-up on the appropriate date; (2) provide information to patients prior to their visit (e.g. dietary requirements, etc.); (3) manage cancellations, rescheduled appointments, and verifications; and (4) procure information from the patient so that the Patient Administration Division can ascertain the eligibility of the patient (HSC Pam 40-7-1, 3).

Determination of an appropriate appointment system will be based on one of the three primary systems, the Walk-In, Centralized, and Decentralized Patient Appointment Systems. The Walk-In System does not require a patient to have an appointment; patients appear at unscheduled times. Many freestanding ambulatory care clinics utilize this system, however, most hospital based clinics consider the Walk-In System inefficient, because it wastes resources such as staff time. The Walk-In System can also result in lengthy patient queues, which subsequently contributes to patient dissatisfaction.

Centralized Patient Appointment System(s) (CPAS) consolidate scheduling for various clinics in a central area; personnel manage appointments for all clinics--there is no ownership of clinics by CPAS employees. Stuart describes some of the advantages of CPAS. Most importantly, CPAS relieve receptionists and nurses of the responsibility of coordinating appointments and eliminates constant telephone activity. Central telephone numbers can ease the efforts of patients attempting to schedule multiple appointments. Employees of a CPAS receive specialized training and in a short period of time, become quite proficient in appointment-making; standardization of procedures consequently improves efficiency. Solely considering direct costs, CPAS are more cost-effective; CPAS can utilize automation in a manner which

would be extremely costly if individual clinics purchased the same equipment. Efficiency can also be improved through the implementation of CPAS. A uniform system of collecting outpatient workload data will undoubtedly prove useful to clinic chiefs. Additionally, the provision of objective, accurate information pertaining to outpatient workload, and physician and clinic productivity can be evaluated by administrators to improve the full utilization of available physician time. Finally, CPAS facilitate coordinated assembly of ancillary support, supplies, and space. (392).

After the conversion of a 540 bed New Brunswick Hospital Kilpatrick investigated the effect of the new appointment system. According to Kilpatrick, CPAS can have positive impacts on a variety of people. Convenience is improved for the patients, because as mentioned above, a central number will coordinate all appointments. Physicians often see the CPAS as a service to make their work easier; staff referring patients to other clinics need only make one call to schedule any number of appointments (Duffey, 33). Also, basic patient data (name, address, insurance number, etc.) only has to be provided once, saving time for both the physician's office and the hospital. Individual patient care departments preferred the CPAS over the DPAS, because telephone disruptions had been reduced and employees were at liberty to perform their job...undisturbed (32).

According to Kilpatrick, the above impacts were anticipated, however there were some benefits which were not expected. Identification of anomalies which had gone unnoticed for years produced significant improvements in the quantity and quality of the service in some departments. For example, administrators of New Brunswick Hospital were able to identify non-functional equipment because a clinic instructed the CPAS, "Don't book any more than two sigmoidoscopic examinations at a time--the third scope doesn't work". It was also discovered that some departments were leaving an excessive amount of slack time in their schedules around coffee and lunch breaks and toward the end of the day. These anomalies had existed for years because the departments involved had adapted to them. Although it could be argued that these situations should have been eliminated through a good administrative program, they were not even identified until the CPAS was adopted and scheduling procedures were administered by the CPAS (33).

Decentralized Patient Appointment System(s) (DPAS) position employees in individual clinics to schedule appointments. Employees work solely for the assigned clinic, and the chief of the clinic is normally responsible for the DPAS clerk working in their clinic. It is not uncommon to find secretaries or receptionists performing the duties of a DPAS clerk. Patients making appointments, changes, or

cancellations call the clinic number to perform these activities. The actual method of scheduling might be manual or automated, depending on clinic resources.

Telecommunications

Regardless of the type of appointment system, a good telecommunications system is essential for smooth functioning of any system (Stuart, 393). Automatic Call Distributors (ACD) are a necessity for CPAS and for DPAS which handle a large number of calls.

The ACD directs calls to the appointment desk on a first-come, first-served basis, and evenly distributes the workload to all appointment clerks (Goldstein, 10). This service aids in eliminating patient complaints of being placed on hold for a long period of time and increases efficiency in handling calls. An automatic recording can inform patients that the appointment clerks are busy, and requests the patient to have certain information available, thus reducing delays on the telephone line caused by patients looking up the information (Goldstein, 10). Long distance calls can be directed to the extension lines by the switchboard in lieu of having the caller wait in the ACD (Goldstein, 10).

Goldstein describes numerous other benefits of the ACD. The number of calls waiting in the ACD can be determined so that staff can be moved from non-appointment clerk jobs to answer calls. Statistics such as workload and length of time spent per caller can be monitored and staffing can be changed

to meet appointment-making needs (12).

The ACD is not without problems, the major drawback of the automatic recording is the impersonalness in communicating with patients (Goldstein, 10). Some patients hang up after getting a recorded message or are placed on hold (Goldstein, 12). However, overall, the ACD has certainly contributed a great deal to effective patient appointment system operations, and it has been a successful adjunct to the computerized appointment system. The two systems have interacted well and have only enhanced the appointment making process (Goldstein, 18).

Other telecommunication requirements of an efficient patient appointment system are characterized by Stuart: (1) the number of telephone circuits and clerks should be capable of maintaining busy signals to six per cent or less, and there should enough circuits to permit easy communication between the patient appointment system and the clinic(s) serviced; (2) the ACD should provide telephone traffic monitoring registers, such as lost call counters; (3) in-house telephones used by patients making follow-up appointments before leaving the clinic is a desirable feature; (4) a separate number for cancellations will reduce the workload on appointment clerks; (5) long-distance callers will appreciate a separate number which does not automatically place them in the ACD; (6) to reduce distractions to the appointment clerks, scheduling should

only be arranged by telephone; (7) appointments should be able to be made at least two months in advance, with a suspense holding file for longer term appointments; (8) all follow-up appointments should be made by appointment clerks, and they should have the authority to double-book patients if necessary; (9) close coordination with the medical records section and other ancillary support sections should be maintained to facilitate smooth patient flow; and (10) control over physician's ability to change schedules must be maintained by the hospital, and physicians must provide timely notice of absences (393, 394).

Conclusion

As the literature demonstrates, patient appointment systems can vastly affect the overall operation of a hospital. Increased demands on ambulatory health care has diverted attention to systems used for scheduling outpatients. Lengthy queues in clinics result in impatient patients and frustrated physicians (Stuart, 392). Numerous studies have shown that a good appointment system can drastically reduce queues and minimize physician slack time.

Prior to determining the type of scheduling system to implement, careful attention should be paid to unique requirements of the clinic. Of course, any one of the three types of appointment system (Walk-In, CPAS, and DPAS), or a combination of all three can be successful if the staff is involved in the planning process, and patient education

occurs. Too often health facilities or clinics decide to adopt a new patient appointment system overnight--minimal planning is performed. The result is usually that improvements are also minimal. In our dynamic environment, a rational system for scheduling outpatient care is extremely difficult to develop (Singer, et. al., 151). However, detailed coordination and preparation for implementation of a new scheduling system will ease the procedure, improve patient satisfaction and physician acceptance of the system. Ultimately, a strategically planned appointment system will increase efficiency of the clinics involved and ancillary support sections.

C H A P T E R I I I

RESEARCH METHODOLOGY

REQUIRED DATA

1. Obtained and compared the following data:

Additional Central Patient Appointment System personnel requirements to schedule General Outpatient Clinic appointments, versus personnel requirements to operate a Decentralized Patient Appointment System, versus personnel requirements to operate a walk-in Patient Appointment System.

2. Performed a comparative economic analysis on the following data:

a. Personnel costs for operations under the Central Patient Appointment System.

b. Personnel costs for operations under the Decentralized Patient Appointment System.

c. Personnel costs for operations under the walk-in system.

d. The cost of training the new Decentralized Patient Appointment System operators.

e. Equipment expenses included:

1). Automatic Sequencing Device

2). Installation of the Automatic Sequencing Device

3). Installation of required trunk lines.

f. Cost of converting space within the General Outpatient Clinic into a Decentralized Patient Appointment System station.

3. Workload statistics (collected from 1 November 1986 through 29 February 1988) for the General Outpatient Clinic during operations under the:

a. Central Patient Appointment System

b. Decentralized Patient Appointment System

c. Walk-in Patient Appointment System

4. Workload statistics (collected from 1 November 1986 through 29 February 1988) for the Emergency Room during operations under the:

a. Central Patient Appointment System

b. Decentralized Patient Appointment System

c. Walk-in Patient Appointment System

DATA COLLECTION

1. Reviewed literature on Patient Appointment Systems.

2. Reviewed applicable Department Of Defense, Health Services Command, and FAMC regulations, policies, and directives.

3. Interviewed the Central Patient Appointment System supervisor to obtain his opinion of the three systems. (Appendix 6)

4. Interviewed the Chief of the Department of Primary Care and Community Medicine and the Chief of the General Outpatient Clinic to determine their opinion of the three

systems and the effect of the systems on the quality of care provided to patients. (Appendix 4)

5. Interviewed all General Outpatient Clinic physicians to determine their opinion of the effect of the three systems on quality of care. (Appendix 4)

6. Interviewed General Outpatient Clinic Decentralized Patient Appointment System operators to obtain their opinion on the advantages and disadvantages of the new system. (Appendix 6)

7. Collected General Outpatient Clinic patient workload statistics from 1 Nov 1986 to 1 Mar 1988.

8. Collected Emergency Room patient workload statistics from 1 Nov 1986 to 1 Mar 1988.

9. Reviewed the Automatic Sequencing Device contract to determine the purchase price, maintenance costs, and other costs which were expected to be incurred in the future.

10. Attained information on costs for Decentralized Patient Appointment System operators from the Civilian Personnel Office. Collected information included:

   a. Hiring costs

   b. Training costs

   c. Wages

11. Interviewed the Chief, Directorate of Engineers and Housing to ascertain the cost of converting space within the the General Outpatient Clinic into an area where the Decentralized Patient Appointment System is located.

PATIENT SURVEY CONSTRUCTION AND METHODOLOGY

1. Half of the sample patient population to be surveyed included all patients entering the General Outpatient Clinic for a two week period. The other sample population was simultaneously drawn from all non-emergent patients entering the Emergency Room. Determination of the Emergency Room patient's emergent status was performed by the triage medic or nurse at the initial screening station.

2. Validation (as described below) of the survey was performed prior to issuing the questionnaires to the selected sample population.

a. Survey design was composed of questions drawn from validated surveys in the Military Health Service Survey. Additional questions were created to specifically address issues this study intended to answer.

b. A pilot survey was utilized to validate the proposed survey.

(1) The pilot survey was administered to five persons with knowledge and experience with survey design. These five persons were carefully selected and considered to be the best qualified (at FAMC) to determine content validity; inclusion of more people would not necessarily increase the validity of the survey.

(2) The pilot survey was administered to three non-Active Duty patients entering the General Outpatient

Clinic. Patients were also interviewed to assess concerns pertaining to access to the General Outpatient Clinic and the Patient Appointment System.

(3) The pilot survey was administered to three non-Active Duty patients entering the Emergency Room. Only non-emergent patients were participants in the pilot survey. Medical triage personnel were the determining authority of the degree of illness/injury. Patients were also interviewed via a structured format to assess patient concerns pertaining to the access to the General Outpatient Clinic Patient Appointment System

c. The survey was reviewed by FAMC's Chief of Biostatistics to ensure content validity.

3. Approval of the Patient Survey by the Human Research Committee and the Institutional Review Board was attained prior to disseminating the Survey.

4. All General Outpatient Clinic patients entering the General Outpatient Clinic during a designated eight day period were requested to participate in the survey.

5. All non-emergent Emergency Room patients entering the Emergency Room during a designated eight day period were requested to participate in the survey.

6. All patients choosing to participate in the survey were advised of Public Law 93-579, Privacy Act of 1974

7. Consumers returned completed surveys by placing them in a covered box located in the General Outpatient Clinic or the

Emergency Room waiting room. Consumers were encouraged to complete the survey prior to departing the Clinic or Emergency Room.

DATA EVALUATION

1. Performed a qualitative analysis of structured interviews conducted with the various Patient Appointment System and General Outpatient Clinic personnel. Considered the opinions of these personnel to provide a final recommendation of the optimal PAS.

2. Using descriptive statistics, compared General Outpatient Clinic and Emergency Room workload data trends. Graphically portrayed collected data.

3. Determined direct costs of walk-in, Central Patient Appointment System, and Decentralized Patient Appointment System General Outpatient Clinic operations. Conducted a cost efficiency analysis comparison of the three systems to ascertain the most cost efficient system.

4. Evaluated consumer surveys.

a. Determined if returned questionnaires were usable; examined for blank surveys, indicators of misinterpretation and noncompliance.

b. Ensured returned surveys were representative of the target sample population subgroups. Returned surveys represented proportions of the real patient population

c. Descriptive statistics were used to describe the patient survey data.

d. Chi-square multilevel statistics was utilized to evaluate significances in responses for specified questions.

e. The use of nonparametric tests were required for individual question response analysis between two or more subgroups or when requesting question response to the preferred choice of appointment system. Since the requested responses were not ratio or interval, but rather nominal or ordinal, parametric tests were not required.

5. Analysis of the collected data was conducted on a computer with the aid of an appropriate statistical software package (Stat-Pac Gold). Entry of the data into the computer was performed by a computer science work-study student.

6. Through the use of structured interviews with General Outpatient Clinic physicians, subjectively evaluated the quality of care.

C H A P T E R I V

FINDINGS AND SIGNIFICANCE OF THE STUDY

RESULTS

COST ANALYSIS

Existing equipment is adequate for operations of the Outpatient Clinic (OPC) under the Centralized Patient Appointment System (CPAS), and no additional equipment was required for operations under the Walk-In System. Only the Decentralized Patient Appointment System (DPAS) resulted in additional equipment costs (See Table 1, below). Table 1 reflects the initial cost of described items and does not include items required on a recurring or infrequent basis.

TABLE 1

Additional Equipment Costs for a DPAS

QTY	DESCRIPTION	UNIT PRICE	TOTAL COST
2	Automatic Call Sequencer Model ACS-46	$2888.00	$5776.00
2	Installation & manufacture of cables	$ 177.00	$ 355.00
3	10-button key sets Model ITT 830	$ 74.37	$ 223.11
1	Key telephone system Model IA2 512 KTS		$ 464.46
	Miscellaneous costs Governmental materials provided to support the sequencer		$ 887.55
		TOTAL =	$7,706.12

In addition to equipment costs, personnel costs were also considered. Two GS-4 (Step 1) civil service employees were hired to operate the DPAS for the OPC. The annual cost of their salaries (assuming they remain at the pay grade of GS-4, Step 1) totals $27,026.

Annual salary: GS-4, Step 1 = $13,513

$13,513 x 2 employees = $27,026

Training costs of the newly hired DPAS operators were computed based on one week salary of a full time instructor. Their instructor was a CPAS operator at the pay grade of GS-4, Step 5. Thus, the training cost of the two DPAS operators total $289.60.

Hourly salary: GS-4, Step 5 = $7.24

$7.24 x 40 training hours = $289.60

The CPAS and Walk-In PAS do not require additional personnel. As mentioned in the Methodology Chapter, costs of renovation for the DPAS and new furniture costs were examined. However, since an existing room within the OPC was already available, renovation did not occur, and existing furniture was also utilized for the OPC DPAS office. Therefore, renovation and new furniture expenses were non-existent. See Table 2 (page 44) for the total tangible cost analysis of the OPC DPAS .

TABLE 2

Total Cost Analysis of the DPAS OPC

YEAR	DESCRIPTION	COST
1	Equipment (from Table 1)	$ 7,706.12
1	Training	$ 289.60
1	Personnel salaries	$27,026.00
	YEAR 1 TOTAL =	$35,021.72
	Assuming a 3% pay increase per year is instituted, and employees are promoted within their grade, annual salaries can be expected to increase yearly.	
2	Personnel salaries GS-4, Step 2 Including a 3% raise	$28,763.78
3	Personnel salaries GS-4, Step 3 Including a 3% raise	$29,690.78
	YEAR 3 MINIMUM CUMULATIVE TOTAL =	$93,476.28

Table 2 (above) exemplifies that operations of the DPAS OPC would continue to escalate additional expenses. The above figures must be compared to zero additional expenses of OPC operations under the CPAS and Walk-In Patient Appointment Systems.

PHYSICIAN WORKLOAD ANALYSIS

Total OPC clinic visits per month and the average number of clinic visits under each of the three patient appointment systems since 1 November 1986 are depicted in Table 3 (page 46).

The average number of OPC clinic visits during operations under the Walk-In PAS is significantly higher (5,481.67) than periods when the OPC operated under the CPAS or DPAS. After the conversion to the CPAS in May 1987 the average number of clinic visits decreased drastically by 1,669, to equal an average of 3,812.67 visits per month. Following implementation of the DPAS in November 1987, there was subsequently a significant increase in the number of average clinic visits per month (4,635.80). Rationalizations pertaining to the above figures shall be discussed in the Discussion section of this paper.

Total Emergency Room (ER) visits per month and the average number of ER visits under each of the three patient appointment systems since 1 November 1986 are depicted in Table 4 (page 47). These figures demonstrate that ER visits have steadily increased sequentially, regardless of the type of appointment system. The average number of visits per month, per appointment system range from 3,830 visits (Walk-In PAS), to 3,988.17 (CPAS), to 4,238 (DPAS).

A graphical illustration of average OPC and ER workload is portrayed in Figure 2 (page 48).

TABLE 3

Outpatient Clinic Visits

PAS	YEAR	MONTH	CLINIC VISITS
WALK-IN:	1986	Nov	7149
		Dec	5841
	1987	Jan	5096
		Feb	4446
		Mar	5122
		Apr	5236
		Total:	32,890.00
		Average/Month:	5,481.67
CPAS:	1987	May	3954
		Jun	4187
		Jul	3142
		Aug	2356
		Sep	3869
		Oct	5368
		Total:	22,876.00
		Average/Month:	3,812.67
DPAS:	1987	Nov	5927
		Dec	4439
	1988	Jan	3940
		Feb	4110
		Mar	4763
		Total:	23,179.00
		Average/Month:	4,635.80

TABLE 4

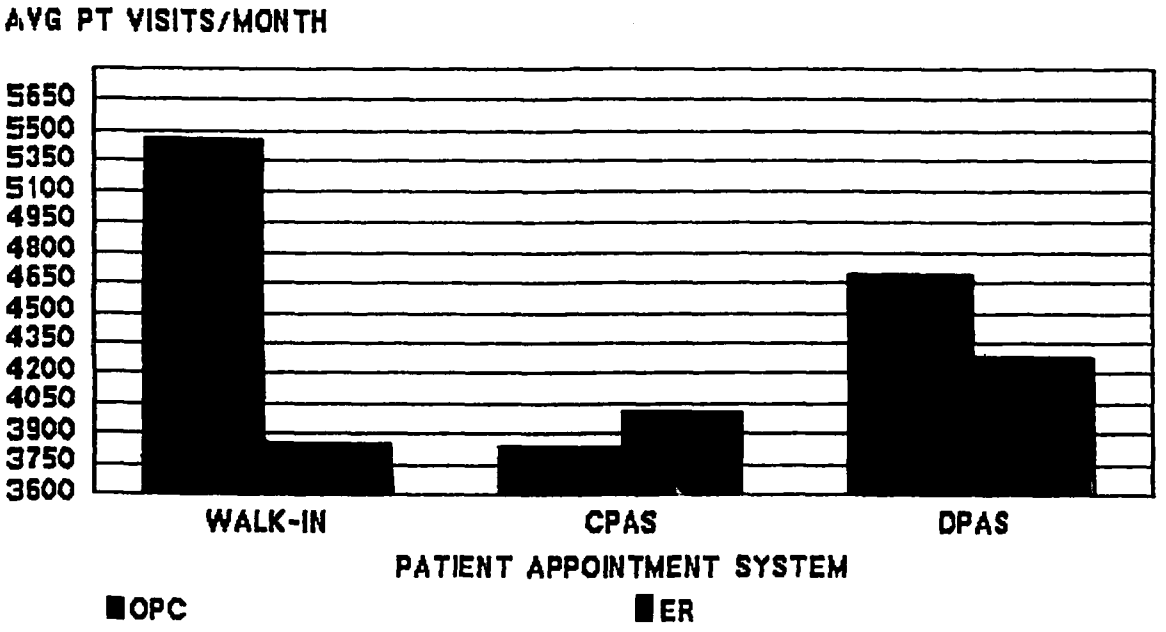
Emergency Room Visits

PAS	YEAR	MONTH	NUMBER OF VISITS
WALK-IN:	1986	Nov	3451
		Dec	4138
	1987	Jan	3832
		Feb	3646
		Mar	4010
		Apr	3903
		Total:	22,980.00
		Average/Month:	3,830.00
CPAS:	1987	May	3914
		Jun	4039
		Jul	3996
		Aug	4031
		Sep	4034
		Oct	3915
		Total:	23,929.00
		Average/Month:	3,988.17
DPAS:	1987	Nov	4220
		Dec	4240
	1988	Jan	4392
		Feb	4300
		Mar	4038
		Total:	21,190.00
		Average/Month:	4,238.00

FIGURE 2

Average Number of OPC & ER Visits

During Operations of the Three Appointment Systems



PROVIDER PERCEPTIONS

Through the structured OPC physician questionnaires, subjective opinions were obtained pertaining to the newly instituted DPAS (Refer to Appendix 4, page 90). Five of the available nine physicians chose to complete the entire questionnaire. Thus, the response rate of the target population was 55%. Hereafter, "physicians" will refer to the sample of OPC health providers who responded to the questionnaire.

The average length of time physicians had practiced at Fitzsimons OPC equalled six years and three months, with two physicians having a tenure of twelve years. Three of the five physicians had practiced at the FAMC OPC during all three patient appointment systems. The overwhelming consensus of respondents was that the DPAS had the most positive effect on the quality of care for OPC patients, was the most efficient scheduling system for the OPC, and was also the preferred method of patient appointment scheduling among physicians. As expected, the Walk-In System was judged as having the most negative effect on the quality of health care.

Major characteristics of the DPAS which were listed as contributors toward the efficient and preferred system included the following: (1) flexibility; (2) fewer operator errors; and (3) physician knowledge of scheduling procedures.

Military medicine is quite structured; however, the DPAS allows physicians more flexibility than any other appointment system. Physicians can request more time be given to initial appointments so that a thorough examination is provided to the patient. Likewise, follow-up appointments can be allotted a shorter time period. The DPAS is not controlled by an external entity, and physicians do have input into their patient schedules.

During the time the OPC scheduled appointments through the CPAS, physicians claimed CPAS operator errors were frequent. Patients were double and triple booked, thus, forcing physicians to treat more patients than they expected. As a result, sometimes patients were rushed through the physician's office and possibly the quality of care was jeopardized. Only two operators schedule DPAS OPC appointments and the operators have taken "ownership" of OPC appointments. Thus, they understand the consequences of overbooking, subsequently such overbookings are extremely rare.

The DPAS office is located in the immediate vicinity of the OPC. Physicians have become familiar with the operators and scheduling procedures. Instead of blaming the patient appointment system, they understand how the system works and are more willing to cooperate with operators by not requesting to change their schedule after it has been finalized.

As mentioned earlier, the Walk-In System was viewed by respondents as drastically risking quality of care. The main reason was caused by the sheer number of patients seeking medical attention. One physician stated, "I saw as many as 84 patients per day...this averaged about 10 patients per hour which is ridiculous if quality of care is considered!" Physicians were required to see as many patients as possible, and as a result, spent a minimum amount of time with each patient. Although none of the physicians admitted it, treating so many patients per day certainly must have fatigued the physicians and affected their decision-making abilities. It probably also contributed toward low morale of the physicians, which subsequently may have resulted in callousness towards patients.

OPERATOR PERCEPTIONS

Centralized Patient Appointment System:

Six of the eight CPAS employee operators were interviewed (response rate = 75%. The average tenure of operators in this System was 8.08 years. Three of the respondents (50%) had worked in the OPC DPAS on a temporary basis for at least two weeks. One hundred percent of the CPAS operators preferred working in the centralized environment; however, all of the operators also agreed that decentralization of the OPC PAS was especially beneficial for the CPAS for one reason.

Prior to the decentralization, the CPAS was inundated with patients seeking OPC appointments. All CPAS lines were constantly engaged, and other patients experienced a great deal of frustration in their attempts to gain access into the CPAS. However, since the OPC conversion to a decentralized system, all CPAS operators have noticed their telephone lines are significantly easier to access. In other words, CPAS operators have increased slack time; this was also evidenced during the times I was in the operational area--calls were rarely stacked in the automatic sequencing device.

One CPAS operator made a valid observation. She explained that all CPAS operators have a responsibility to schedule internal and external (from numerous Air Force Bases and other Army Medical Activities) consults during their "so-called" slack time. Thus, they rarely have true "free time". Decentralized PAS operators are not required to perform any extra duties beyond scheduling current telephonic patient appointments. Thus, when they are not actually on the telephone they are actually unproductive.

Outpatient Clinic Decentralized Patient Appointment System:

At the time the two DPAS operators were queried they had each worked with the System for less than six months. Operators in this environment were very familiar with the operations of the OPC and the medical staff. Solidarity was evident in the OPC DPAS Office, and the operators appeared to

take "ownership" in their job. One operator said the reason she liked working for the DPAS versus the CPAS was because "...of the overall willingness of each [staff member] person to be helpful in any manner or way." They exhibited a better understanding of the entire health care system for which they were scheduling appointments. Besides being responsible for scheduling appointments, they felt responsible to the OPC, as well!

Although positive aspects of the DPAS appeared to outweigh the negative, both operators also expressed unfavorable factors of the DPAS. They believed patients were experiencing difficulty accessing the OPC telephone appointment system; patients often complained of constant busy signals. One operator said that virtually all appointments were filled within two hours after opening the telephone lines in the morning.

PATIENT PREFERENCE SURVEY

A total of 700 patient surveys were distributed in the Outpatient Clinic and Emergency Room. The valid response rate was 47.29% (n=331), while the total response rate equalled 57.57% (n=403). Hereafter, all described results have been derived from valid responses (n=331) (see Appendix 7).

Characteristics of survey respondents are presented in Table 5 (page 54). The majority of patients were retirees (40.8%), with retiree dependents and active duty dependents,

TABLE 5

Patient Demographics

BENEFICIARY STATUS	n	%
Active Duty Dependent	84	25.4%
Retiree	135	40.8%
Retiree Dependent	112	33.8%
Total:	331	100.0%

Missing Cases: 0
Response Rate: 100.0%

SEX

	ACTIVE DUTY DEP		RETIREE		RETIREE DEP	
	n	%	n	%	n	%
Female:	81	98.8	3	2.3	108	98.2
Male :	1	1.2	125	97.7	2	1.8

Total Female : n = 192
% = 60%

Total Male : n = 128
% = 40%

Missing Cases: 11
Response Rate: 96.7%

DISTANCE BETWEEN FAMC & RESIDENCE

Miles	n	%
0 - 10:	179	54.2%
11 - 20:	73	22.1%
21 - 30:	44	13.3%
> 30:	34	10.3%

Missing Cases: 1
Response Rate: 99.7%

respectfully, being the second most frequent, and least frequent respondents. The female to male ratio of respondents equalled 60:40, and over three-quarters of those surveyed reside less than 21 miles from FAMC.

Frequency of use per patient of the OPC was greater than that of the ER (See Table 6,). Table 7 and Figure 3 (page 56) depict descriptive statistics of the frequency of patient utilization of each PAS since 1 November 1986.

TABLE 6

Outpatient Clinic & Emergency Room Utilization
Per Patient
(Since 1 Nov 86)

	OPC	ER
Min # Times Used :	0	0
Max # Times Used :	50	22
Mean :	6.62	2.83
Median :	5	2
Mode :	3	1
Standard Deviation :	6.94	3.73
95% Confidence Interval:	5.84 - 7.39	2.41 - 3.25
Missing Cases :	22	27
Response Rate :	93.4%	91.8%

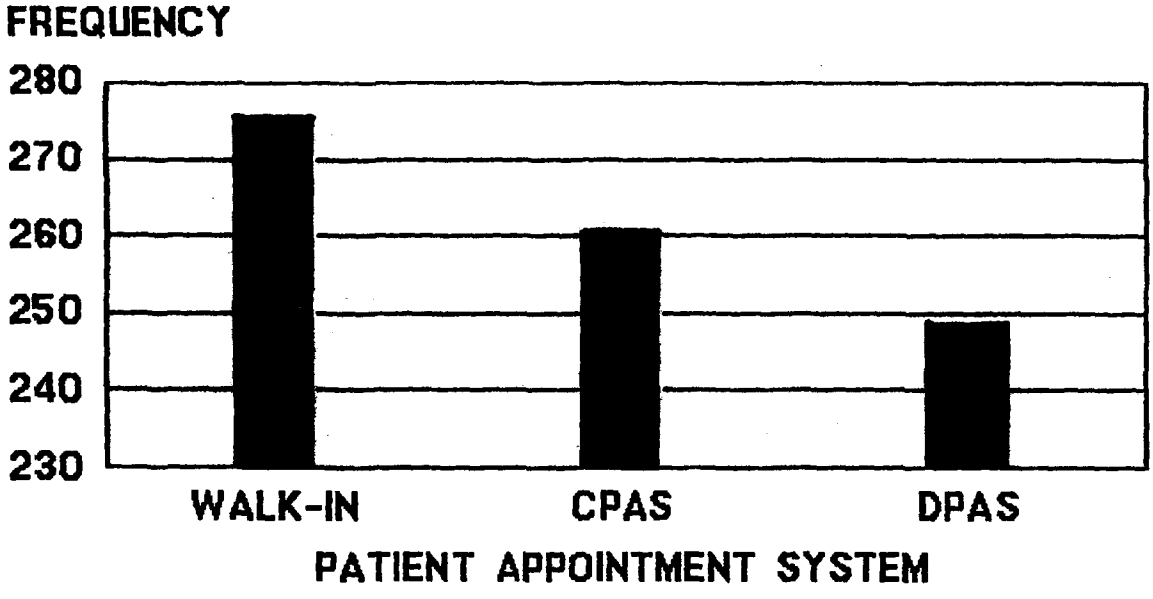
TABLE 7
Patient Appointment System Frequency of Use
Per Patient
(Since 1 Nov 86)

PAS	Mean	Median	Mode	SD	SE	95% CI	Response Rate
WI :	3.14	2	1	2.84	.19	2.77-3.51	67%
CPAS:	3.41	2	2	3.55	.25	2.91-3.90	60%
DPAS:	2.91	2	1	3.79	.26	2.40-3.41	65%

FIGURE 3

PAS FREQUENCY OF USE

WI/CPAS/DPAS



Evaluation via simple descriptive statistics performed on patient preference of PAS (Question #8) reveals a significant partiality towards the DPAS (See Table 9, page 57 and Figure 4, page 58). Crosstabs (Appendix 8) and Chi Square analyses (Table 8, page 57) confirmed the DPAS preference, and significance. Regardless of the respondent's residential distance from FAMC, the majority preferred the DPAS over the CPAS. Additionally, both males and females, and all status of respondents (active duty dependent, retiree dependent, retiree) favored the DPAS. Forty percent of respondents "strongly agreed" that since implementation of the DPAS, availability of appointments had improved.

TABLE 8

Chi-Square Analysis of

Frequency of OPC Use by PAS Preference

Chi-square	:	65.832
Degrees of freedom	:	40
Probability of chance	:	0.005
Missing Cases	:	62
Response Rate	:	81.3%

TABLE 9

Patient Appointment System Preference

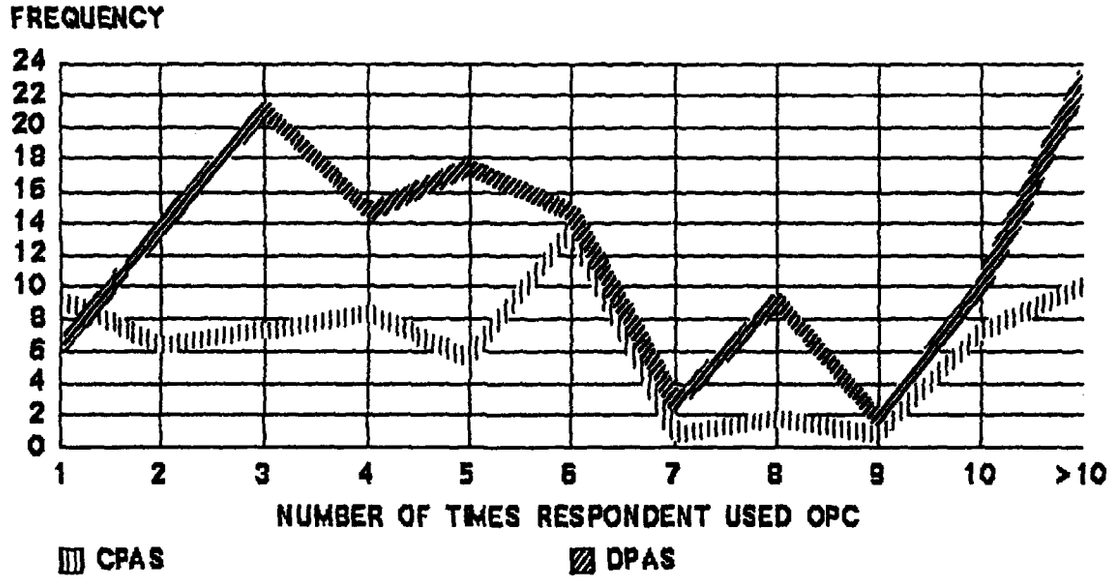
Appointment System	n	%
CPAS	87	30.1%
DPAS	157	54.3%
Not Sure	45	15.6

Missing Cases: 42
Response Rate: 87.3%

FIGURE 4

PAS PREFERENCE

By Frequency of OPC Use



Analysis of opinions pertaining to improvements in the availability of appointments since the implementation of the DPAS (Question #9, are not indicative of any ameliorations of access to care. Approximately half of the respondents (49%) did not believe availability of appointments had improved. The other half (51%) agreed that since institution of the DPAS, access to appointments had indeed improved. It must be noted, however, that the response rate for Question #9 was only 67.7%; thus, it is highly feasible that responses are skewed.

Respondents of the survey tended to be more satisfied with the Walk-In PAS when they used the OPC more than four times (see Figure 5, page 60). However, more patients were "very satisfied" with the DPAS than either the Walk-In PAS or CPAS; the CPAS continued to result in the least patient satisfaction (see Figure 6, page 61). Chi-square analyses of satisfaction of the three PASs and frequency of OPC use are depicted in Table 10 (page 61) (for crosstabs, see Appendix 9).

Slightly more patients using the CPAS than the DPAS experienced difficulty attaining appointments (See Figure 7, page 62). The 95 percent Confidence Interval around the mean for the number of times respondents were unsuccessful in their attempts to procure an appointment ranged from 2.63 to 3.48 for the CPAS, and 1.94 to 3.40 for the DPAS. Table 11 (page 62) displays descriptive statistics performed on the

FIGURE 5

PATIENT SATISFACTION

By Frequency of OPC Use

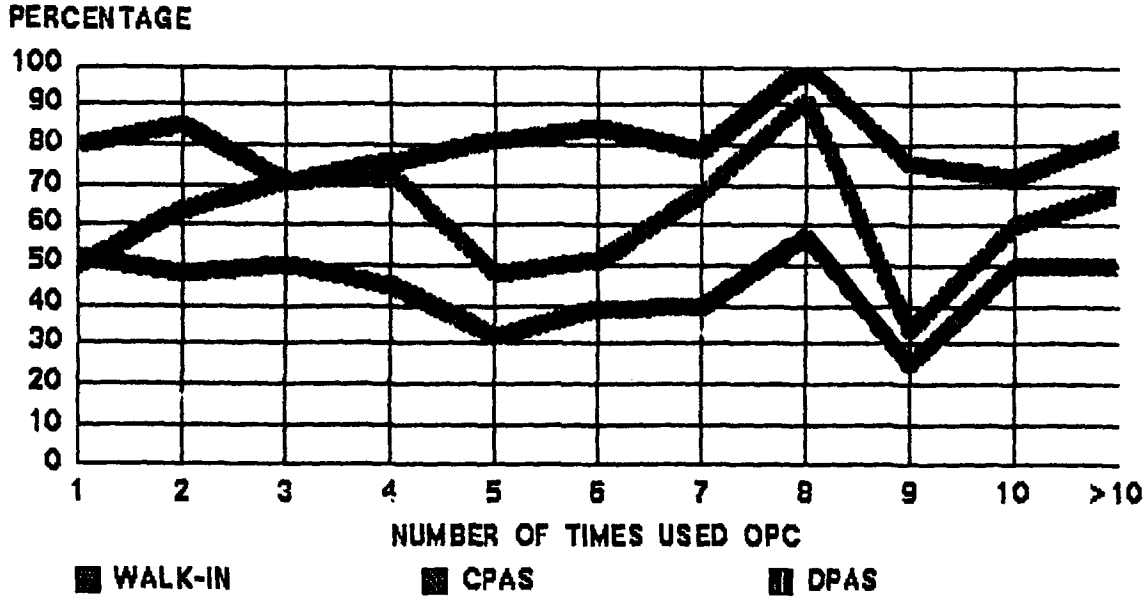


FIGURE 6

PATIENT SATISFACTION
Of Patient Appointment Systems

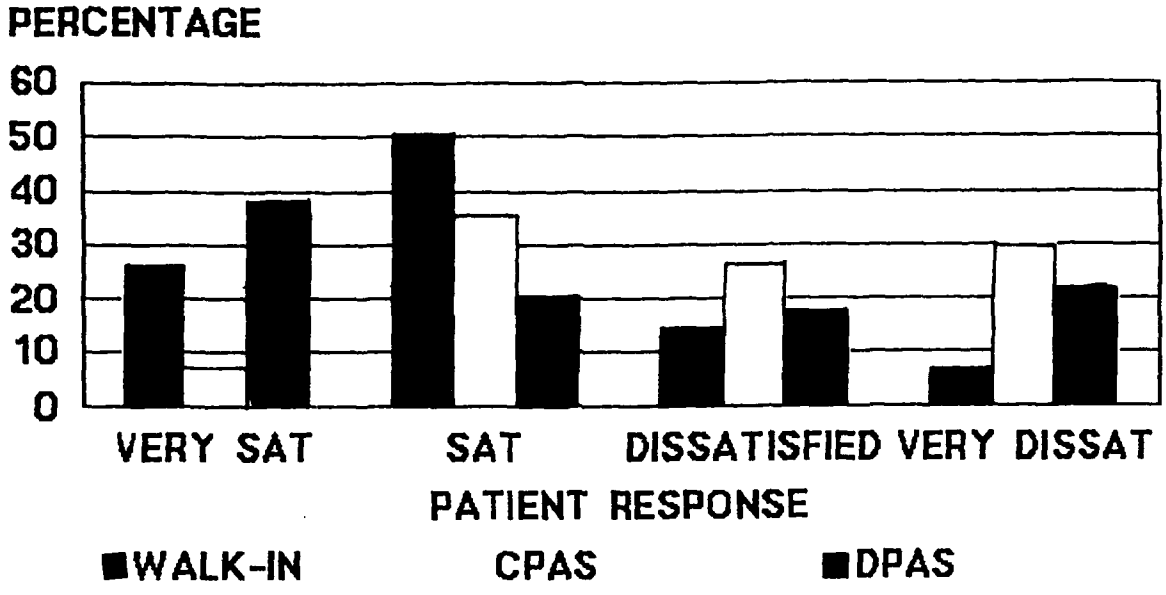


TABLE 10

Chi-Square Analysis of
Satisfaction of PAS and Frequency of Use

Walk-In PAS:		
Chi-Square	:	47.521
Degrees of Freedom	:	60
Probability of Chance	:	0.877
Response Rate	:	77.6%
CPAS:		
Chi-Square	:	53.351
Degrees of Freedom	:	60
Probability of Chance	:	0.719
Response Rate	:	85.8%
DPAS:		
Chi-Square	:	66.652
Degrees of Freedom	:	60
Probability of Chance	:	0.262
Response Rate	:	73.4%

FIGURE 7

DIFFICULTY OF ATTAINING APPOINTMENTS

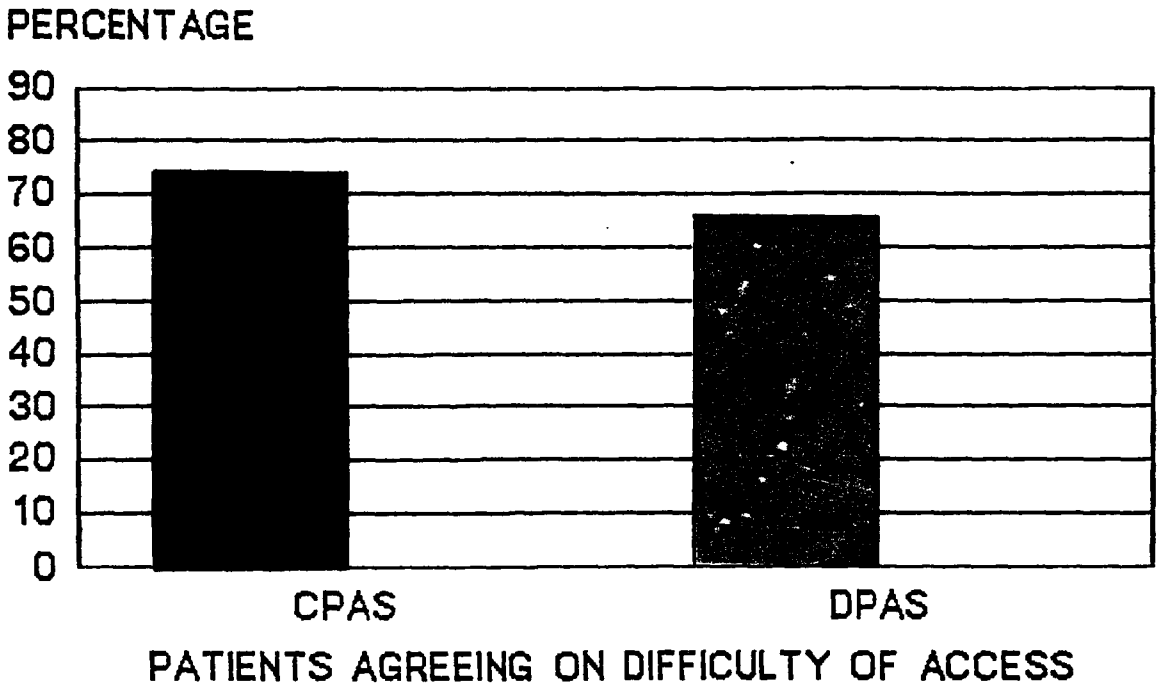


TABLE 11

Number of Times Dialed

Before Reaching an Operator

PAS	Mean	Median	Mode	SD	SE	95% CI	Response Rate
CPAS:	12.63	10	10	14.17	.92	10.83-14.44	72%
DPAS:	15.41	6	10	38.01	2.57	10.38-20.44	67%

number of times respondents were required to dial the CPAS and DPAS prior to reaching an operator.

Almost twice as many DPAS patients as Walk-In patients sought non-emergent medical treatment at the Emergency Room as a direct result of experiencing difficulty in attaining an OPC appointment. Figure 8 (below) illustrates Emergency Room abuse; these patients admittedly knew the condition they were presenting to the Emergency Room was not of an urgent nature.

FIGURE 8

NUMBER USING EMERGENCY ROOM

For Each PAS

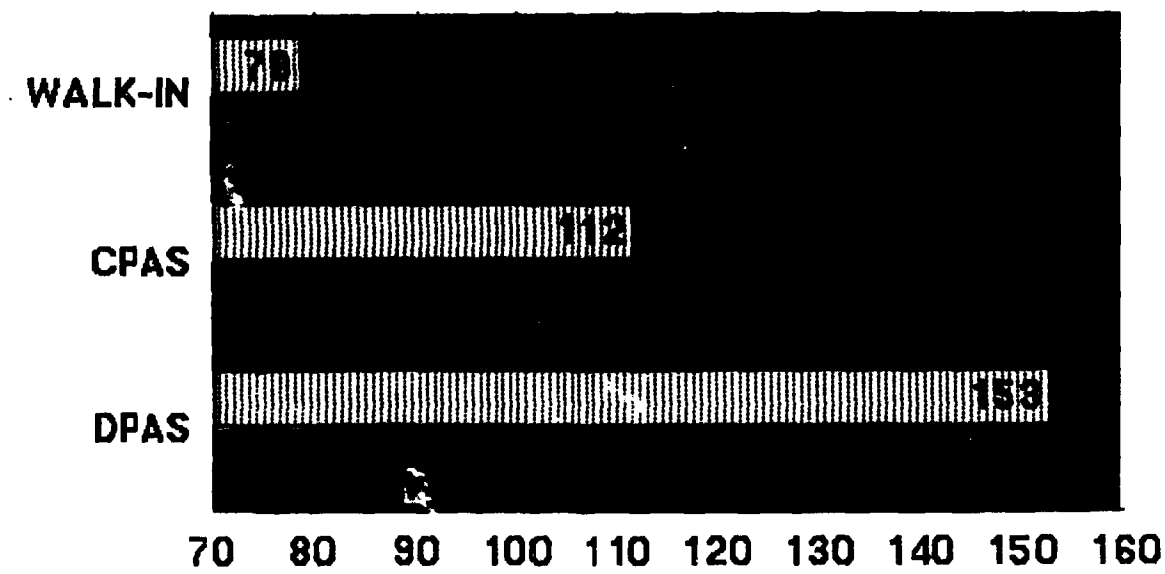


TABLE 12

Abuse of the ER by the Frequency of Use of Walk-In/CPAS/DPAS

Walk-In PAS:		
Chi-Square	:	11.846
Degrees of Freedom	:	12
Probability of Chance	:	0.458
Response Rate	:	58.0%
CPAS:		
Chi-Square	:	15.032
Degrees of Freedom	:	12
Probability of Chance	:	0.240
Response Rate	:	53.5%
DPAS:		
Chi-Square	:	7.659
Degrees of Freedom	:	10
Probability of Chance	:	0.662
Response Rate	:	54.7%

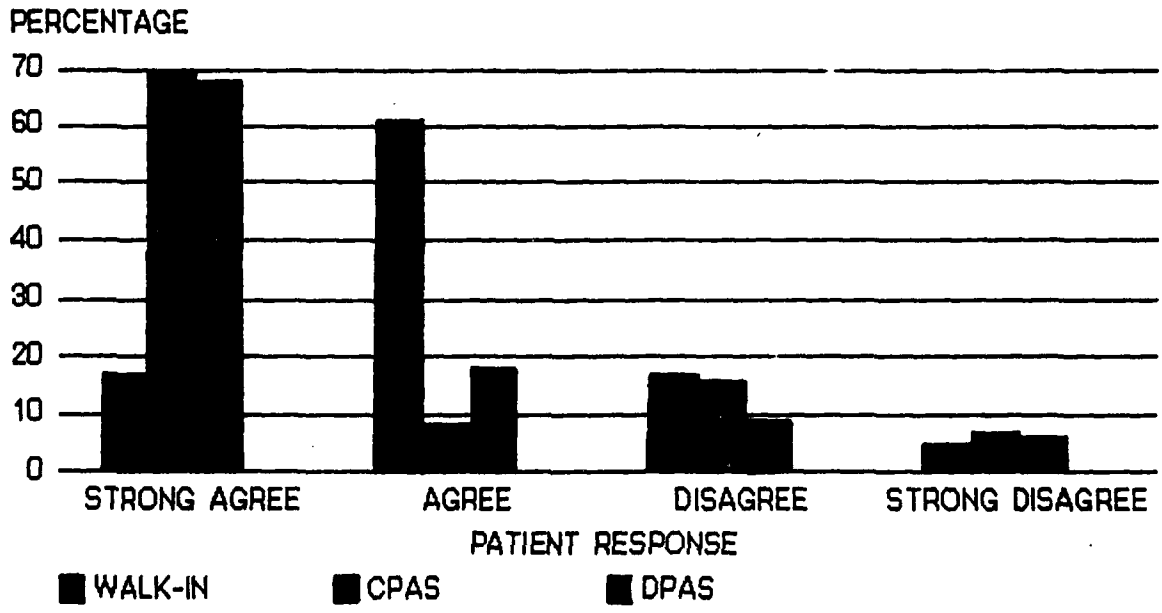
Chi-square analyses performed on the number of times patients used the Walk-In PAS, CPAS, and DPAS and sought primary care at the Emergency Room are illustrated in Table 12 (above). The patient survey revealed that 88% of CPAS respondents and 91% of DPAS respondents perceived the primary obstacles to attaining OPC appointments to be the constantly engaged telephone lines, and non-availability of appointments.

After patients obtained an appointment at the OPC through either the CPAS or DPAS, promptness of medical treatment following signing into the OPC were measured. Perceptions of physician punctuality for patient appointments are illustrated in Figure 9 (page 65).

FIGURE 9

PROMPTNESS OF TREATMENT

After Sign-In



Survey results did not indicate a significant difference between CPAS and DPAS patient perception of operator courteousness and helfulness. The large majority of respondents agreed that CPAS and DPAS operators were both courteous and helpful; only 16 percent of CPAS and 11 percent of DPAS disagreed.

DISCUSSION

Both objective and intangible results gathered during the research period comprehensively substantiate that the best patient appointment system for the Fitzsimons Army Medical Center General Outpatient Clinic to be the Decentralized Appointment System (DPAS). The following evaluation and analysis of the study results describe why the DPAS was selected over the Walk-In and Centralized Appointment System as the optimal system.

COSTS AND PRODUCTIVITY

Financial costs involved in implementing and operating a decentralized patient appointment system (DPAS) for the Outpatient Clinic (OPC) were only a minuscule portion of Fitzsimons (FAMC) total yearly budget. However, in this era of diminishing resources, it was essential to consider monetary aspects.

Equipment and installation requirements and expenses were carefully assessed prior to the establishment of the purchase contract. All procured materials were deemed fundamental for the success of a DPAS. In fact, Stuart (393) supports the idea that automatic call distributors are a necessity for patient appointment systems which handle numerous calls. Actually, the one time $7,706.12 (refer to page 42) expense for additional equipment and installation is

a rather insignificant proportion of the three year minimum cumulative total cost (refer to page 44) of $93,476.28.

Personnel costs are not exorbitant, however, results suggest they could be reduced. Two full-time operators are not required to efficiently operate the OPC DPAS. Conversely, they are inefficient; primarily as a result of a surplus of nonproductive time.

As one of the current DPAS operators and several CPAS operators who had temporarily worked in the OPC experienced, almost all appointments are filled within the first two hours of opening the telephone lines (refer to page 53). In addition, since Central Appointments does not maintain supervisory control over the OPC operators, they are not required to schedule consults. The result is an excessive amount of slack time. Without risking reduced efficiency, the OPC could continue to operate a DPAS and cut annual personnel costs ($35,021.72) in half by employing only one operator.

Ideally, only one part-time operator would be employed to work in the OPC DPAS. As mentioned above, results do not allude that two or even one additional operator is required for the OPC DPAS. Although this person's worksite would be at the OPC, the CPAS supervisor could maintain administrative control over the part-time employee. Currently, a close working relationship between the OPC DPAS and FAMC CPAS does

not exist. However, it would be imperative that such a relationship develop if personnel costs were expected to be reduced.

With the CPAS Supervisor maintaining control over all operators, he could ensure that the OPC was never without an operator when the part-time employee was ill or on vacation. He could task a CPAS operator to the OPC for the time their operator was expected to be away from the job. He could ensure that all operators did not take leave at the same time. Currently, if both OPC operators are ill at the same time, the CPAS has no obligation to "lend" the OPC an operator. Additionally, if the OPC required more than one operator to work for a couple of hours in the morning, the CPAS Supervisor could provide them an extra operator.

Transferring control of the OPC DPAS operator to the CPAS Supervisor would relieve the OPC administrator from the responsibility of managing additional personnel. It would increase efficiency, by decreasing the amount of slack time. Finally, and most importantly, it would reduce personnel costs from two full time employees to to one part time employee.

PHYSICIAN WORKLOAD

Although physician productivity is not the major issue being scrutinized in this study, it must be examined. A reduction of clinic visits during operations of any patient

appointment system might indicate a problem with the system. Emergency room physician workload was also analyzed. It was theorized that some patients, unable to attain an Outpatient Clinic (OPC) appointment seek primary medical attention at the emergency room (ER). If an inverse relationship between OPC and ER clinic visits did indeed exist, a reduced number of available OPC appointments would unfavorably affect the ER. However, Table 3 and 4 (refer to pages 46 and 47) do not substantiate that a strong inverse relationship exists. Regardless of the volume of OPC clinic visits or the type of appointment system, ER visits continually increased.

As expected, of the three OPC patient appointment systems (Walk-In, Centralized, and Decentralized) the Walk-In system resulted in the highest number of clinic visits (refer to page 46). Coincidentally, during the period the Walk-In System was instituted, the average number of ER visits per month was lowest. Fewer average OPC clinic visits occurred from May 1987 through October 1987, when appointments were scheduled through the CPAS. Following implementation of the DPAS, average clinic visits escalated. Thus, solely considering physician productivity, the Walk-In Appointment System is most efficient.

However, as the following discussion of OPC physician opinions of the patient appointment systems will reveal, efficiency, cannot be measured by productivity alone.

OPC PHYSICIAN PERCEPTIONS

Workload should certainly be considered when determining the optimal patient appointment system; however, the quality of health care must not be neglected. In fact, the quality of care is the most important aspect to be considered in any health care research project. Physicians were deemed the most suitable persons to determine whether patient appointment systems jeopardized or enhanced the quality of care. Evaluations based on provider perceptions favor the DPAS.

Respondents of the physician questionnaire expressed strong opinions. All Outpatient Clinic (OPC) health care providers adamantly insisted that the Walk-In System compromised the quality of medical treatment. The vast number of unscheduled patients seeking care overloaded physicians to the point of exhaustion, and as a result, medical judgement was not as keen. Emphasis was not on providing the best care possible; instead, it was focused on treating the greatest number of patients. None of the respondents had anything positive to relate to the Walk-In System. Their comments pertaining to the adverse effect of the Walk-In System on the quality of care compel the abandonment of it from further consideration as the optimal scheduling system.

The overwhelming favorite appointment system amongst OPC physicians was the Decentralized Patient Appointment System

(DPAS). Centralized patient appointment system (CPAS) operator errors and unfamiliarity with their scheduling procedures appeared to irritate physicians. Prior to decentralization, OPC physicians were not satisfied with the operators. There appeared to be an air of antagonism between physicians and operators. According to some physicians, CPAS only complicated scheduling of appointments. And according to some operators, physicians were demanding and "not-so-friendly".

The DPAS has resulted in fewer operator mistakes (e.g. overbookings) and simultaneously, created a beneficial rapport between DPAS operators and the OPC staff. Thus, the two groups are cooperative and supportive of each other. The outcome has evolved in a healthy and less stressful work environment.

OPERATOR PERCEPTIONS

It was important to appraise both Centralized Patient Appointment System (CPAS) and Decentralized Patient Appointment System (DPAS) operator opinions of the Outpatient Clinic (OPC) DPAS because they were the ones most familiar with the different systems. The operators were aware of routine problems and were quite frank in their discussions pertaining to the DPAS. However, the validity of their opinions of the "best" patient appointment system is questionable.

Personal biases and loyalty to their work site were probably reflected in their answers. All employees preferred the type of appointment system for which they were currently working--CPAS operators believed the CPAS was best, and DPAS employees favored the DPAS.

Discounting operator opinions of the "best" system, both CPAS and DPAS employees concluded that decentralization of the OPC had contributed positively to the FAMC patient appointment system. Prior to the transition, hundreds of OPC callers per day, attempting to schedule appointments, had hampered other patient's access to the CPAS. Since the OPC DPAS has been operational, CPAS operators have received comments from patients on the increased ease of access to the CPAS telephone lines.

PATIENT PERCEPTIONS

Peterson and Orlikoff (55) and Powers (394) described patients as one of the leading forces behind the success of any health care institution. Therefore, it was critical to obtain patient preferences and attitudes toward the different appointment systems.

The valid response rate of over 47 percent of the 700 surveys is impressive. The high rate is probably attributed to the manner in which the survey was distributed and collected. Also, the attitudes of cooperative respondents should not be ignored.

In the Outpatient Clinic (OPC), an assigned military member diligently provided every eligible (non-active duty) patient a questionnaire and requested s/he complete and return it prior to departing the OPC. This person was situated in a strategic location--between the medical records window and the appointment sign-in counter. After securing their record, patients had to pass by the survey desk in order to reach the appointment counter. Surveys in the Emergency Room were dispensed by whomever was signing patients into the facility. Thus, it was inevitable that appropriately designated patients received the questionnaire and instructions. Since collection of the surveys was simple and convenient to patients (refer to page 41), most of those who completed the survey were cooperative in returning them.

Crosstabs (Appendix 9) performed on patient satisfaction according to the frequency of use (refer to page 59) revealed that the Walk-In System produced a higher satisfaction rate across the board. Regardless of the number of times respondents utilized the OPC, they were least satisfied with the Centralized Patient Appointment System (CPAS).

EMERGENCY ROOM ABUSE:

Significantly fewer Walk-In patients admitted using the Emergency Room for routine medical care when they were unable to attain an OPC appointment. The trend for Emergency Room abuse appeared to be chronological; and increased steadily, regardless of the type of appointment system. Currently,

more patients are being treated at the OPC, and, the number of patients seeking treatment at the Emergency Room (ER) continues to increase.

Table 12 (refer to page 64) displays p-values of crosstabs performed on ER abuse by the frequency of OPC use. Earlier the alpha level of significance was established as $p < .05$. Regardless of the type of patient appointment system (PAS), all p-values exceed the .05 level of significance. Thus, it is reasoned that the type of scheduling system has little or no relevance on ER abuse.

SATISFACTION AND PREFERENCE:

Chi-Square analyses were performed on crosstabs of patient satisfaction of the three appointment systems and their frequency of use (refer to Table 10). All three Systems failed to prove significance at the .05 alpha level. Probability of chance values of .877, .719, and .262, respectfully, for the Walk-In, CPAS, and DPAS Systems are not significant at the $p < .05$ level. Thus, no significant relationship between the frequency of OPC use and PAS satisfaction can be interpreted from the results of this study.

A significant difference ($p < .05$) exists between patient responses for their satisfaction of the three appointment systems. The CPAS resulted in the least number of patients claiming satisfaction, and the Walk-In PAS scored higher than either the DPAS or CPAS. All computed figures

reflect the Walk-In System to be the preferred System. However, for reaons previously stated, it is not feasible to consider readopting the Walk-In System; physicians have already deemed that the Walk-In System jeopardizes quality of care. For this reason, one question in the survey mandated that patients select a favorite system between either the CPAS or DPAS.

Patient preference of either the CPAS or DPAS (refer to Table 9, page 57) reveal the favored System to be the DPAS. Chi-square value of 65.832 (degrees of freedom = 40), with a p-value of .005 verifies that the established level of significance of $p < .05$ is satisfied (refer to Table 8, page 57). Thus, it is indicated that the majority of patients prefer the DPAS.

ACCESS:

Slightly more respondents believed that it was easier to access the DPAS than the CPAS (refer to Figure 7, page 62). However, the slight difference is not significant enough to contrive a supportable inference. The upper limit of 95 percent confidence intervals for the number of times survey respondents dialed the appointment system prior to reaching an operator varied between the CPAS and DPAS.

The difference between upper confidence intervals of 14.44 and 20.44 (refer to Table 11, page 6[illegible]) is quite profound, and conflicts with patient perception of access to

the Systems. It is also incongruent with patient satisfaction and preference. If all statistics are valid, then two explanations could justify the difference.

First of all, patients are not judging their satisfaction and/or preference on the number of times they are required to dial their telephones before reaching an operator. Although patients are required to dial more times with the DPAS, when they do reach an operator, they more frequently are able to schedule an appointment. This is supported by the increase in the number of average OPC appointments since implementation of the DPAS, and patient's perception of difficulty of access.

There is also a second feasible explanation which might justify the discrepancy between patient satisfaction and patient perception to access. As employees of the OPC, DPAS operators may feel more of an obligation toward patients. They could be providing supplementary information pertaining to appointments and are more helpful to patients.

PROMPTNESS OF TREATMENT:

There was virtually little significance to differences in the promptness of treatment. The majority of CPAS and DPAS respondents "strongly agreed" that they were treated by a physician within a reasonable period of time after signing into the OPC. However, the majority of Walk-In patients "agreed" that they were treated in a reasonable time period.

Since the measurement scale (e.g. strongly agree, agree, etc.) is so intangible, it is impossible to make any meaningful conclusions from this data. To do so, would require the assignment of actual times between sign-in and treatment.

CHAPTER V
CONCLUSION

Comprehensive analysis of the results revealed the optimal patient appointment scheduling system for the Fitzsimons Army Medical Center General Outpatient Clinic was the Decentralized Patient Appointment System. The estimated cost to convert to the Decentralized Patient Appointment System was nominal compared to the consequential benefits acquired by implementation of the new System. Measurements of physician workload, physician and patient satisfaction, and the quality of care strongly indicated that the Decentralized System was superior to the Walk-In and Centralized Systems.

Whenever any program, process, or system within a health care institution is altered, it is essential that the quality of care be carefully considered. Reductions in the level of quality frequently indicate that the new program, process, or system has not been perfected and is not yet ready for installment. Subjective measurement, via physician opinions, exhibited the Walk-In Appointment System to vastly jeopardize the quality of patient care. Because the Walk-In System was believed to be a hazard to quality assurance and quality of care standards, it was ostracized, and was not considered for the final decision to determine the optimal patient appointment system.

Comparisons of the Decentralized (DPAS) and Centralized (CPAS) Patient Appointment System demonstrated the DPAS to result in a higher average workload per month. Although health care providers were treating more patients per day, they overwhelmingly preferred the Decentralized System over any of the other Systems. The flexibility provided by the new scheduling system was noted as one of the major advantages of the System. Physicians believed that the ease of performing patient follow-up had improved. While in any medical setting, it is important physicians are content, most health clinics exist primarily to treat patients. Patients surveyed in this study also preferred the Decentralized Appointment System.

It was for the reasons mentioned above that the Decentralized Patient Appointment System was unquestionably deemed the superlative System. However, results of this study should not be inferred upon clinics other than general outpatient clinics. Decentralization of all specialty and subspecialty clinics would be quite costly and would probably not prove to be the most efficient solution.

Certain characteristics of the Fitzsimons General Outpatient Clinic made it ideal for conversion. In proportion to the low number of desired available appointments, the Outpatient Clinic experienced an extremely high demand for services; it was impossible to meet the demand for services. Additionally, virtually all patients

sought appointments on a random basis; physicians did not determine when patients should be treated. Unless other specialty clinics possess these attributes, the consideration to decentralize should be carefully evaluated.

Most clinics do not have the same level of demand for services as the General Outpatient Clinic, and many can schedule only a small portion of the Outpatient Clinic's appointments. It was determined that even with its voluminous workload, the Outpatient Clinic does not require the employment of a full-time operator. Once the decision to decentralize scheduling of appointments within an entire hospital has been made, contemplation of decentralizing down to the department level, rather than the service level might result in a less costly and more efficient system.

CHAPTER VI
RECOMMENDATIONS

Based on the results of this study, recommend that the Fitzsimons Army Medical Center General Outpatient Clinic continue to utilize the Decentralized Patient Appointment System for scheduling patients. However, the method of operations should be slightly altered.

General Outpatient Clinic operators should return to the administrative control of the Centralized Patient Appointment System Supervisor. Depending on the telephone workload, one or two operators should be permanently assigned to the Outpatient Clinic, with additional duties performed at the Centralized System. It is not necessary to employ two full time employees at the Outpatient Clinic (OPC); one part time employee could sufficiently manage the OPC Decentralized Patient Appointment System (DPAS). After all appointments have been filled, the operator could return to Central Appointments, and an answering machine could relate the message to patients. The Supervisor should maintain the authority to determine the number of hours employees work at the Clinic. This will simultaneously enable the development of rapport between Outpatient Clinic staff and operators, and reduce operator slack time.

This study has illustrated that an efficient Outpatient Clinic Decentralized Patient Appointment System can improve

access to the Clinic by increasing the availability of appointments. The Decentralized System also enhances the quality of care, physician satisfaction, and patient attitudes. Findings of this study should be of interest to other hospitals desiring to inrease access and efficiency of their patient appointment system. Globally, recommend that health facilities experiencing a vast shortage of general outpatient clinic appointments consider the advantages of decentralizing their scheduling system.

APPENDIX 1

SURVEYOR INSTRUCTIONS

FOR THE OUTPATIENT CLINIC

1. Give a survey form and pencil to all non-active duty patients signing in for an appointment. Do not selectively distribute them to patients.

2. Explain to the patient the purpose of the survey form is to find the best patient appointment system for the Outpatient Clinic. The best system will allow patients to make appointments easier and to be seen quicker.

3. Maintain a positive attitude in conducting the survey. Encourage patients to take time to answer all questions that apply. The validity of the survey may rely on the efforts and attitudes of personnel having direct contact with the patients.

4. Ask patients to return the completed survey in the designated box located in your Clinic, prior to leaving the Clinic.

5. Patients with any questions or comments pertaining to the survey may contact CPT Bean (x4226 or Room 1109, Bldg 500).

THANK-YOU!

APPENDIX 2

SURVEYOR INSTRUCTIONS

FOR EMERGENCY ROOM

1. Give a survey form and pencil to all non-active duty, non-emergent/non-trauma patients signing in. Patients requiring immediate care should not receive a questionnaire. Do not selectively distribute them to patients

2. Explain to the patient the purpose of the survey form is to find the best patient appointment system for the Outpatient Clinic. The best system will allow patients to make appointments easier and to be seen at the General Outpatient Clinic quicker.

3. Maintain a positive attitude in conducting the survey. Encourage patients to take time to answer all questions that apply. The validity of the survey may rely on the efforts and attitudes of personnel having direct contact with the patients.

4. Ask patients to return the completed survey in the designated box located in the Emergency Room prior to leaving the Clinic.

5. Patients with any questions or comments pertaining to the survey may contact CPT Bean (x4226 or Room 1109, Bldg 500).

THANK-YOU!

APPENDIX 3

GENERAL OUTPATIENT CLINIC PATIENT APPOINTMENT SYSTEM SURVEY

The Privacy Act of 1974 (PL 93-579) requires that all individuals be informed of the purposes and uses to be made of the information solicited.

PURPOSE: By completing this survey you will assist in determining the Patient Appointment System which best meets your needs and makes it easier for you to make an appointment at the Outpatient Clinic.

USES: Information from the surveys will be aggregated and considered for decision-making to improve the Outpatient Clinc appointment system.

EFFECTS OF NON-DISCLOSURE: Participation in this survey is voluntary. No penalty will be imposed for failure to respond to these questions. However, since you have been randomly selected to represent the Fitzsimons patient population, your participation is very important to the success of the project. Please take the time to complete and return the survey. Thank-you!

RETURN OF THE SURVEY: After completing the survey, please drop it in the marked box in either the Outpatient Clinic or Emergency Room located near the exit.

DEFINITIONS

OUTPATIENT CLINIC: Located in building 409.

EMERGENCY ROOM: Located in the main hospital.

PATIENT APPOINTMENT SYSTEM: The system by which you make doctor appointments.

CENTRALIZED PATIENT APPOINTMENT SYSTEM: Patients call one number to make all of their appointments. Telephone operators do not work for the clinics, but work in one common area.

DECENTRALIZED PATIENT APPOINTMENT SYSTEM: Patients call directly to the clinic where they want to make the appointment. Operators work for the clinic.

WALK-IN PATIENT APPOINTMENT SYSTEM: Patients do not require an appointment to be treated. Patients are treated on the basis of need for medical care and first-come, first-served.

PLEASE PRINT YOUR ANSWERS DIRECTLY ON THIS QUESTIONNAIRE

PLEASE CHECK ONLY ONE BOX FOR EACH QUESTION
IF YOU DO NOT KNOW THE EXACT ANSWER PLEASE APPROXIMATE

1. WHO IS FILLING OUT THIS SURVEY?
   [] Active Duty [] Active Duty Dependent [] Retiree
   [] Retiree Dependent [] Other

2. WHAT IS YOUR SEX? [] Female [] Male

3. WHAT IS THE DISTANCE BETWEEN FAMC AND YOUR PLACE OF RESIDENCE?
   [] 0 - 10 miles [] 11 - 20 miles [] 21 - 30 miles
   [] More than 30 miles

4. THE OUTPATIENT CLINIC HAS USED 3 APPOINTMENT SYSTEMS DURING THE LAST YEAR. WE NEED TO KNOW WHAT YOUR EXPERIENCE HAS BEEN WITH EACH.

A. HOW MANY TIMES HAVE YOU USED THE OUTPATIENT CLINIC SINCE 1 NOV 1986? _____

B. HOW MANY TIMES HAVE YOU USED THE EMERGENCY ROOM SINCE 1 NOV 1986? _____

W A L K - I N A P P O I N T M E N T S Y S T E M

5. PRIOR TO 18 MAY 1987, PATIENTS USING THE OUTPATIENT CLINIC WERE TREATED ON A WALK-IN BASIS. THE FOLLOWING QUESTIONS REFER TO THE OUTPATIENT WALK-IN SYSTEM.

A. DID YOU USE THE OUTPATIENT CLINIC AS A WALK-IN PRIOR TO 18 May 1987, WHEN PATIENTS DID NOT HAVE TO MAKE APPOINTMENTS?
   [] Yes. If so, how many times from 1 Jan 1987 through 1 May 1987 did you use the Walk-In System? _____
   [] No. If NO, go to Question #6.
   [] Don't remember

B. HOW SATISFIED WERE YOU WITH THE WALK-IN SYSTEM?
   [] Very Dissatisfied [] Dissatisfied [] Not Sure
   [] Very Satisfied [] Satisfied

C. I WAS SEEN BY A DOCTOR REASONABLY SOON AFTER SIGNING IN.
   [] Strongly Disagree [] Disagree [] Not Sure
   [] Strongly Agree [] Agree

D. IF YOU WERE DISSATISFIED WITH THE WALK-IN SYSTEM, SELECT THE MAIN REASON WHY YOU WERE NOT SATISFIED.

[ ] Long waits in the Outpatient Clinic waiting room
[ ] Could not get in to be seen by a doctor
[ ] Crowded waiting rooms
[ ] Other (Please specify) _____

_____.

E. DURING THIS TIME, WAS THERE ANY TIME WHEN YOU WANTED TO SEE A DOCTOR BUT FOR SOME REASON NEVER DID?

[ ] No
[ ] Yes, did not have time
[ ] Yes, it was too difficult to get an appointment

F. DURING THIS PERIOD I USED THE EMERGENCY ROOM BECAUSE IT WAS TOO DIFFICULT TO BE SEEN AT THE OUTPATIENT CLINIC.

[ ] Agree [ ] Disagree

C E N T R A L I Z E D A P P O I N T M E N T S Y S T E M

6. BETWEEN 18 MAY AND 30 NOVEMBER 1987 APPOINTMENTS WERE MADE THROUGH THE CENTRAL PATIENT APPOINTMENT SYSTEM. THE FOLLOWING QUESTIONS REFER TO WHEN YOU MADE APPOINTMENTS BY CALLING A NUMBER AT CENTRAL APPOINTMENTS.

A. DID YOU USE THE OUTPATIENT CLINIC DURING THIS PERIOD?

[ ] Yes. If so, how many times? _____
[ ] No.
[ ] Don't remember

B. HOW SATISFIED WERE YOU WITH MAKING APPOINTMENTS THROUGH THE CENTRAL APPOINTMENT SYSTEM?

[ ] Very Dissatisfied [ ] Dissatisfied [ ] Not Sure
[ ] Very Satisfied [ ] Satisfied

C. I SAW A DOCTOR REASONABLY SOON AFTER SIGNING IN.

[ ] Strongly Disagree [ ] Disagree [ ] Not Sure
[ ] Strongly Agree [ ] Agree

D. APPROXIMATELY HOW MANY TIMES WERE YOU UNABLE TO GET AN APPOINTMENT DURING THIS TIME? _____

E. PLEASE INDICATE THE MAIN REASON YOU WERE UNABLE TO MAKE APPOINTMENTS AT THE OUTPATIENT CLINIC DURING THIS TIME FRAME.

[ ] Telephone lines were always busy.
[ ] Reached the operators, but all appointments were filled.
[ ] Appointments were available, but the times were not agreeable with my schedule.
[ ] Other (Please specify) _____ ____

_____

F. THE CENTRAL APPOINTMENT OPERATORS WERE COURTEOUS AND HELPFUL.
[ ] Strongly Disagree [ ] Disagree [ ] Not Sure
[ ] Strongly Agree [ ] Agree

G. DURING THIS PERIOD I USED THE EMERGENCY ROOM BECAUSE IT WAS TOO DIFFICULT TO GET AN APPOINTMENT AT THE OUTPATIENT CLINIC.
[ ] Disagree [ ] Agree

H. DURING THIS PERIOD IT WAS DIFFICULT TO GET AN OUTPATIENT CLINIC APPOINTMENT.
[ ] Strongly Disagree [ ] Disagree [ ] Not Sure
[ ] Strongly Agree [ ] Agree

I. ON THE AVERAGE, ABOUT HOW MANY TIMES DID YOU HAVE TO CALL BEFORE REACHING AN OPERATOR? _____

D E C E N T R A L I Z E D A P P O I N T M E N T S Y S T E M

7. TELEPHONE APPOINTMENTS MADE DIRECTLY WITH THE OUTPATIENT CLINIC'S OPERATORS. BEGINNING 30 NOV 1987 THE OUTPATIENT CLINIC CHANGED THE APPOINTMENT SYSTEM TO A DECENTRALIZED PATIENT APPOINTMENT SYSTEM. THE FOLLOWING QUESTIONS REFER TO THE DECENTRALIZED SYSTEM.

A. HAVE YOU USED THE OUTPATIENT CLINIC SINCE 30 NOV 87?
[ ] Yes. If so, how many times have you used it? _____
[ ] No
[ ] Don't remember

B. HOW SATISFIED HAVE YOU BEEN WITH THE DECENTRALIZED PATIENT APPOINTMENT SYSTEM?
[ ] Very Dissatisfied [ ] Dissatisfied [ ] Not Sure
[ ] Very Satisfied [ ] Satisfied

C. I USUALLY SEE A DOCTOR REASONABLY SOON AFTER SIGNING IN.
[ ] Strongly Disagree [ ] Disagree [ ] Not Sure
[ ] Strongly Agree [ ] Agree

D. APPROXIMATELY HOW MANY TIMES HAVE YOU BEEN UNABLE TO GET AN APPOINTMENT DURING THIS TIME? _____

E. PLEASE INDICATE THE MAIN REASON YOU HAVE BEEN UNABLE TO MAKE APPOINTMENTS AT THE OPC DURING THIS TIME FRAME.
[ ] Telephone lines were always busy.
[ ] Reached the operators, but all appointments were filled.
[ ] Appointments were available, but the times were not agreeable with my schedule.
[ ] Other (Please specify) _____

F. THE DECENTRALIZED APPOINTMENT OPERATORS ARE COURTEOUS & HELPFUL.
[] Strongly Disagree [] Disagree [] Not Sure
[] Strongly Agree [] Agree

G. DURING THIS PERIOD I USED THE EMERGENCY ROOM BECAUSE IT WAS TOO DIFFICULT TO GET AN APPOINTMENT AT THE OUTPATIENT CLINIC.
[] Disagree [] Agree

H. DURING THIS PERIOD IT WAS DIFFICULT TO GET AN OPC APPOINTMENT.
[] Strongly Disagree [] Disagree [] Not Sure
[] Strongly Agree [] Agree

I. ABOUT HOW MANY TIMES DID YOU HAVE TO CALL BEFORE REACHING AN OPERATOR? _____

---

8. IF YOU HAVE EXPERIENCE WITH BOTH THE CENTRALIZED APPOINTMENT SYSTEM AND THE DECENTRALIZED APPOINTMENT SYSTEM, WHICH DO YOU PREFER?
[] Central System [] Decentralized System
[] Do not have experience with both Systems.

9. SINCE 30 NOV 87 THE AVAILABILITY OF APPOINTMENTS HAS IMPROVED.
[] Strongly Disagree [] Disagree [] Not Sure
[] Strongly Agree [] Agree

If you have any questions or comments about this survey, please contact CPT Bean at 361-4226 or in Room 1109, Building 500.

THANK-YOU

For taking the time to complete this survey!

APPENDIX 4

STRUCTURED INTERVIEW QUESTIONS

FOR OPC PHYSICIANS

1. HOW LONG HAVE YOU PRACTICED MEDICINE IN THE FAMC GENERAL OUTPATIENT CLINIC (OPC)?

2. WERE YOU AWARE THAT THREE DIFFERENT TYPES OF PATIENT APPOINTMENT SYSTEMS (PAS) HAVE BEEN UTILIZED FOR THE OPC SINCE JAN 1986 THROUGH THE PRESENT UNTIL NOW?
[] Yes []No

THE FOLLOWING QUESTIONS PERTAIN TO THE WALK-IN PAS:

3. WHAT WAS THE MAJOR DISADVANTAGE FOR HEALTH CARE PROVIDERS DURING THE PERIOD THE OPC OPERATED UNDER THE WALK-IN PAS?

4. WHAT WAS THE MAJOR ADVANTAGE FOR HEALTH CARE PROVIDERS DURING THE PERIOD THE OPC OPERATED UNDER THE WALK-IN PAS?

5. WHAT WAS THE AVERAGE AMOUNT OF TIME YOU SPENT WITH EACH PATIENT?

[] Less than 10 minutes	[] 10 - 15 minutes
[] 15 - 20 minutes	[] 20 - 25 minutes
[] 25 - 30 minutes	[] More than 30 minutes

6. WAS THE QUALITY OF CARE COMPROMISED BY THE WALK-IN PAS?
[] Yes [] No, Go to Question 7

A. If "Yes", how?

THE FOLLOWING QUESTIONS PERTAIN TO THE CENTRALIZED PAS (CPAS):

7. WHAT WAS THE MAJOR DISADVANTAGE FOR HEALTH CARE PROVIDERS DURING THE PERIOD THE OPC OPERATED UNDER THE CPAS?

8. WHAT WAS THE MAJOR ADVANTAGE FOR HEALTH CARE PROVIDERS DURING THE PERIOD THE OPC OPERATED UNDER THE CPAS?

9. YOU WERE SCHEDULED FOR FIFTEEN MINUTE BLOCKS OF TIME FOR EACH PATIENT. DID YOU FIND THAT FIFTEEN MINUTE APPOINTMENTS WERE ADEQUATE FOR THE MAJORITY OF PATIENTS?

[ ] Very adequate [ ] Adequate
[ ] Very inadequate [ ] Inadequate

10. WERE YOU ABLE TO ENSURE FOLLOW-UP APPOINTMENTS WERE SCHEDULED FOR SELECT PATIENTS?

[ ] Always [ ] Almost Always [ ] Sometimes
[ ] Almost Never [ ] Never

11. WHAT WAS THE PROCESS YOU USED TO SCHEDULE FOLLOW-UP APPOINTMENTS?

[ ] Scheduled directly with the patient
[ ] Scheduled for the patient with Central Appointments
[ ] Instructed patient to call Central Appointments
[ ] Other(please explain)

12. WAS THE QUALITY OF CARE JEOPARDIZED BY THE CPAS?

[ ] Yes [ ] No, Go to Question 17

IF YES, WHY?

THE FOLLOWING QUESTIONS PERTAIN TO THE DECENTRALIZED PAS (DPAS):

13. WHAT WAS THE MAJOR DISADAVANTAGE FOR HEALTH CARE PROVIDERS DURING THE PERIOD THE OPC OPERATED UNDER THE DPAS?

14. WHAT WAS THE MAJOR ADVANTAGE FOR HEALTH CARE PROVIDERS DURING THE PERIOD THE OPC OPERATED UNDER THE DPAS?

15. HOW MUCH ADDITIONAL FLEXIBILITY DID THE DPAS CONTRIBUTE TO THE SCHEDULING OF PATIENTS?

[ ] A lot [ ] A little [ ] None

16. WERE YOU ABLE TO ENSURE FOLLOW-UP APPOINTMENTS WERE SCHEDULED FOR DESIGNATED PATIENTS?

[] Always [] Almost always [] Sometimes
[] Almost never [] Never

17. WHAT WAS THE PROCESS YOU USED TO SCHEDULE FOLLOW-UP APPOINTMENTS?

[] Scheduled directly with patient
[] Scheduled with the appointment clerks for the patient
[] Instructed patient to call for an appointment
[] Other (please explain)

18. WAS THE QUALITY OF CARE JEOPARDIZED BY THE CPAS?

[] Yes [] No, Go to Question 25.

IF YES, WHY?

THE FOLLOWING QUESTIONS PERTAIN TO ALL THREE PASs:

19. WHICH PAS HAD THE MOST POSITIVE EFFECT ON THE QUALITY OF CARE?

[] Walk-In PAS [] CPAS [] DPAS

20. WHICH PAS HAD THE MOST NEGATIVE EFFECT ON THE QUALITY OF CARE?

[] Walk-In PAS [] CPAS [] DPAS

21. WHICH OF THE THREE PASs HAS WORKED THE BEST FOR THE OPC?

[] Walk-In PAS [] CPAS [] DPAS

22. WHICH OF THE THREE PASs OR COMBINATION OF THE THREE DO YOU THINK COULD WORK THE BEST FOR FAMC's OPC?

[] Walk-In PAS [] CPAS [] DPAS

23. COMMENTS:

THANK-YOU FOR COMPLETING THIS QUESTIONNAIRE!

APPENDIX 5

STRUCTURED INTERVIEW QUESTIONS

FOR CPAS TELEPHONE OPERATORS

1. How long have you worked for CPAS? _____

2. Were you aware that 3 different types of PASs have been utilized for the OPC since Jan 86 until now? _____

3. In your opinion, what was the greatest advantage to scheduling OPC patients under the CPAS?

4. In your opinion, what was the greatest disadvantage to scheduling OPC patients under the CPAS?

5. What has been the greatest advantage for you since the conversion of the OPC to a DPAS?

6. What has been the greatest disadvantage for you since the conversion of the OPC to a CPAS?

7. What do customers most frequently complain about?

8. How could the CPAS's efficiency be improved?

9. Would you prefer to work in a decentralized or centralized PAS? _____

10. Why?

APPENDIX 6

STRUCTURED INTERVIEW QUESTIONS

FOR DPAS TELEPHONE OPERATORS

1. How long have you worked for the OPC DPAS? _____

2. Have you ever worked for CPAS? _____

3. Were you aware that 3 different types of PASs have been utilized for the OPC since Jan 86 until now? _____

4. If you have also worked in CPAS which do you system do you prefer? _____

   A. What is the great advantage of that system over the other?

   B. What is the biggest disadvantage of that system over the other?

   C. Would you prefer to workin a DPAS or CPAS? _____

   D. Why?

5. What do you like best about the OPC DPAS?

6. What do you like least about the OPC DPAS?

7. How could the DPAS's efficiency be improved?

APPENDIX 7

DESCRIPTIVE STATISTICS PERFORMED ON PATIENT QUESTIONNAIRE

1. STATUS	NUMBER	PERCENT
Active Duty Dependent	84	25.4
Retiree	135	40.8
Retiree Dependent	112	33.8
Total	331	100.0
Response Rate		100%

2. SEX	NUMBER	PERCENT
Female	192	60.0
Male	128	40.0
Total	320	100.0
Response Rate:		96.7%

3. DISTANCE OF RESIDENCE	NUMBER	PERCENT
0 - 10 miles	179	54.2
11 - 20 miles	73	22.1
21 - 30 miles	44	13.3
> - 30 miles	34	10.3
Total	330	100.0
Response Rate		99.7

4A. FREQUENCY OF OPC USE SINCE 1 NOV 86

Minimum:	0	SD	: 6.94
Maximum:	50	SE	: .40
Mean :	6.62	95% CI	: 5.84 - 7.39
Median :	5	Response Rate:	93.4%
Mode :	3		

4B. FREQUENCY OF ER USE SINCE 1 NOV 86

Minimum:	0	SD	: 3.73
Maximum:	22	SE	: .21
Mean :	2.83	95% CI	: 2.41 - 3.25
Median :	2	Response Rate:	91.8%
Mode :	1		

5. USE OF WALK-IN PAS	NUMBER	PERCENT
Yes	276	84.1
No	45	13.7
Don't remember	7	2.1
Total	328	100.0
Response Rate		99.1

5A(YES). FREQUENCY OF WALK-IN PAS USE

Minimum:	0	SD	: 2.84
Maximum:	25	SE	: .19
Mean :	3.14	95% CI	: 2.77 - 3.51
Median :	2	Response Rate:	67.4%
Mode :	1		

5B. WALK-IN PAS SATISFACTION	NUMBER	PERCENT
Very Dissatisfied	18	6.5
Dissatisfied	42	15.2
Satisfied	141	51.1
Very Satisfied	75	27.2
Total	276	100.0
Response Rate		83.4

5C. PROMPTNESS OF TREATMENT	NUMBER	PERCENT
Strongly Disagree	15	5.3
Disagree	48	17.1
Agree	170	60.5
Strongly Agree	48	17.1
Total	281	100.0
Response Rate		84.9

5D. REASON FOR DISSATISFACTION WITH WALK-IN PAS

NUMBER	PERCENT
Long queues in OPC	72	64.9
Appts not attainable	18	16.2
Crowded waiting rooms	15	13.5
Other	6	5.4
Total	111	100.0
Response Rate		33.5

5E. PERSONS UNABLE TO SEE A PHYSICIAN

NUMBER	PERCENT	
No	179	66.1
Yes, not enough time	24	8.9
Yes, too difficulty to get an appt	68	25.1
Total	271	100.0
Response Rate		81.9%

5F. EMERGENCY ROOM ABUSE	NUMBER	PERCENT
Agree	79	32.0
Disagree	168	68.0
Total	247	100.0
Response Rate		74.6

6A. USE OF CPAS	NUMBER	PERCENT
Yes	261	79.1
No	57	17.3
Don't remember	12	3.6
Total	330	100.0
Response Rate		99.7

6A(YES). FREQUENCY OF CPAS USE

Minimum:	1	SD	: 3.55
Maximum:	30	SE	: .25
Mean :	3.41	95% CI	: 2.91 - 3.90
Median :	2	Response Rate:	60.4
Mode :	2		

6B. CPAS SATISFACITON	NUMBER	PERCENT
Very Dissatisfied	91	29.8
Dissatisfied	81	26.6
Satisfied	109	35.7
Very Satisfied	24	7.9
Total	305	100.0
Response Rate		92.1

6C. PROMPTNESS OF TREATMENT	NUMBER	PERCENT
Strongly Disagree	20	7.1
Disagree	45	15.9
Agree	23	8.1
Strongly Agree	195	68.9
Total	283	100.0
Response Rate		85.5

6D. NUMBER OF TIMES UNABLE TO ATTAIN AN APPOINTMENT

Minimum:	0	SD	: 3.20
Maximum:	25	SE	: .22
Mean :	3.06	95% CI	: 2.63 - 3.48
Median :	2	Response Rate:	65.9
Mode :	2		

6F. CPAS COUTEOUSNESS	NUMBER	PERCENT
Strongly Disagree	10	3.4
Disagree	38	12.8
Agree	63	21.2
Strongly AGree	186	62.6
Total	297	100.0
Response Rate		89.7

6G. EMERGENCY ROOM ABUSE	NUMBER	PERCENT
Disagree	166	59.7
Agree	112	40.3
Total	278	100.0
Response Rate		84.0

6H. DIFFICULTY OF ATTAINING APPTS	NUMBER	PERCENT
Strongly Disagree	13	5.0
Disagree	54	20.6
Agree	68	26.0
Strongly Agree	127	48.5
Total	262	100.0
Response Rate		79.2

6I. AVG # OF TIMES REQUIRED TO DIAL BEFORE REACHING AN OPERATOR

Minimum:	0	SD	: 14.17
Maximum:	100	SE	: .92
Mean :	12.63	95% CI	: 10.83 - 14.44
Median :	10	Response Rate	: 71.9%
Mode :	10		

7A USE OF DPAS	NUMBER	PERCENT
Yes	249	75.7
No	69	21.0
Don't remember	11	3.3
Total	329	100.0
Response Rate		99.4

7A(YES) FREQUENCY OF DPAS USE

Minimum:	1	SD	: 3.79
Maximum:	50	SE	: .26
Mean :	2.91	95% CI	: 2.40 - 3.41
Median :	2	Response Rate	: 65.0%
Mode :	1		

7B. DPAS SATISFACTION	NUMBER	PERCENT
Very Dissatisfied	58	22.0
Dissatisfied	48	18.2
Satisfied	56	21.2
Very Satisfied	102	38.6
Total	264	100.0
Response Rate		79.8

7C. PROMPTNESS OF TREATMENT	NUMBER	PERCENT
Strongly Disagree	15	5.7
Disagree	23	8.7
Agree	47	17.9
Strongly Agree	178	67.7
Total	263	100.0
Response Rate		79.5

7D. # TIMES UNABLE TO ATTAIN AN APPOINTMENT

Minimum:	0	SD	: 5.63
Maximum:	70	SE	: .37
Mean :	2.67	95% CI	: 1.94 - 3.40
Median :	2	Response Rate:	68.9%
Mode :	0		

7F. OPERATOR COURTEOUSNESS	NUMBER	PERCENT
Strongly Disagree	11	3.9
Disagree	21	7.4
Agree	78	27.7
Strongly Agree	172	61.0
Total	282	100.0
Response Rate		85.2

7G EMERGENCY ROOM ABUSE	NUMBER	PERCENT
Agree	109	41.6
Disagree	153	58.4
Total	262	100.0
Response Rate		79.2

7H DIFFICULTY OF ATTAINING APPTS	NUMBER	PERCENT
Strongly Disagree	20	8.0
Disagree	64	25.5
Agree	70	27.9
Strongly Agree	97	38.6
Total	251	100.0
Response Rate		75.8

7I. AVG # TIMES REQUIRED TO DIAL BEFORE REACHING AN OPERATOR

Minimum:	0	SD	: 38.0069
Maximum:	500	SE	: 2.57
Mean :	15.41	95% CI	: 10.38 - 20.44
Median :	6	Response Rate:	66.5
Mode :	10		

8. PREFERENCE OF PAS's	NUMBER	PERCENT
CPAS	87	30.1
DPAS	157	54.3
Neither	45	15.6
Total	289	100.0
Response Rate		87.3

9. AVAILABILITY OF APPTS HAS IMPROVED SINCE DPAS	NUMBER	PERCENT
Strongly Disagree	61	27.2
Disagree	48	21.4
Agree	25	11.2
Strongly Agree	90	40.2
Total	224	100.0
Response Rate		67.7

APPENDIX 8

CROSSTABS

Frequency of OPC Use X Patient Appointment System Preference:
(Y Axis) (X Axis)

Number Row % Column % Total %	CPAS	DPAS	NEITHER	Row Totals
0	0	0	4	
	0	0	100	4
	0	0	9.1	1.5
	0	0	1.5	
1	10	7	8	
	40	28	32	25
	12.8	4.8	18.2	9.3
	3.7	2.6	3	
2	7	15	5	
	25.9	55.6	18.5	27
	9	10.2	11.4	10
	2.6	5.6	1.9	
3	8	23	12	
	18.6	53.5	27.9	43
	10.3	15.6	27.3	16
	3	8.6	4.5	
4	9	16	2	
	33.3	59.3	7.4	27
	11.5	10.9	4.5	10
	3.3	5.9	0.7	
5	6	19	2	
	22.2	70.4	7.4	27
	7.7	12.9	4.5	10
	2.2	7.1	0.7	
6	15	16	2	
	45.5	48.5	6.1	33
	19.2	10.9	4.5	12.3
7	1	3	1	
	20	60	20	5
	16.7	83.3	0	1.9
	0.4	1.1	0.4	

8	2	10	0	
	16.7	83.3	0	12
	2.6	6.8	0	4.5
	0.7	3.7	0	
9	1	2	0	
	33.3	66.7	0	3
	1.3	1.4	0	1.1
	0.4	0.7	0	
>10	11	25	6	
	26.2	57.1	14.3	42
	14.1	17	13.6	15.6
	4.1	9.3	2.2	
Column	78	147	44	269
Totals	29	54.6	16.4	100

APPENDIX 9

CROSSTABS

Frequency of OPC Use X Satisfaction with WI PAS
(Y Axis) (X Axis)

Number Row% Column Total %	Very Dissat	Dissat	Satisf	Very Satisf	Row Totals
0	0	1	3	1	
	0	20	60	20	5
	0	2.6	2.3	1.5	1.9
	0	0.4	1.2	0.4	
1	0	3	11	6	
	0	15	55	30	20
	0	7.7	8.3	8.8	7.8
	0	1.2	4.3	2.3	
2	4	3	14	3	
	16.7	12.5	58.3	12.5	24
	22.2	7.7	10.6	4.4	9.3
	1.6	1.2	5.4	1.2	
3	3	6	20	9	
	7.9	15.8	52.6	23.7	38
	1[illegible].7	15.4	15.2	13.2	14.8
	1 2	2.3	7.8	3.5	
4	2	3	13	8	
	7.[illegible]	11.5	50	30.8	26
	11.1	7.7	9.8	11.8	10.1
	0.8	1.2	5.1	3.1	
5	1	3	16	5	
	4	12	64	20	25
	5.6	7.7	12.1	7.4	9.7
	0.4	1.2	6.2	1.9	
6	2	5	17	10	
	5.9	14.7	50	29.4	34
	11.1	12.8	12.9	14.7	13.2
	0.8	1.9	6.6	3.9	

7	0	0	2	2	
	0	0	50	50	4
	0	0	1.5	2.9	1.6
	0	0	0.8	0.8	
8	0	6	5	3	
	0	42.9	35.7	21.4	14
	0	15.4	3.8	4.4	5.4
	0	2.3	1.9	1.2	
9	1	0	3	0	
	25	0	75	0	4
	5.6	0	2.3	0	1.6
	0.4	0	1.2	0	
>10	5	9	28	21	
	7.9	14.3	44.4	33.3	63
	27.8	23.1	21.2	35.6	22.7
	1.8	3.6	10.1	8.2	
Column	18	39	132	68	257
Totals	7	15.2	51.4	26.5	100

APPENDIX 10
CROSSTABS
Frequency of OPC Use X Satisfaction with CPAS
(Y Axis) (X Axis)

Number Row% Column Total %	Very Dissat	Dissat	Satisf	Very Satisf	Row Totals
0	2	3	0	0	
	40	60	0	0	5
	2.4	3.9	0	0	1.8
	0.7	1.1	0	0	
1	7	5	12	1	
	28	20	48	4	25
	8.3	6.6	11.8	4.5	8.8
	2.5	1.8	4.2	0.4	
2	6	9	13	1	
	20.7	31	44.8	3.4	29
	7.1	11.8	12.7	4.5	10.2
	2.1	3.2	4.6	0.4	
3	11	11	17	5	
	25	25	38.6	11.4	44
	13.1	14.5	16.7	22.7	15.5
	3.9	3.9	6	1.8	
4	6	10	10	3	
	20.7	34.5	34.5	10.3	29
	7.1	13.2	9.8	13.6	10.2
	2.1	3.5	3.5	1.1	
5	11	6	7	1	
	44	24	28	4	25
	13.1	7.9	6.9	4.5	8.8
	3.9	2.1	2.5	0.4	
6	10	12	10	4	
	27.8	33.3	27.8	11.1	36
	11.9	15.8	9.8	18.2	12.7
	3.5	4.2	3.5	1.4	
7	1	2	1	1	
	20	40	20	20	5
	1.2	2.6	1	4.5	1.8
	0.4	0.7	0.4	0.4	

8	5	1	6	2	
	35.7	7.1	42.9	14.3	14
	6	1.3	5.9	9.1	4.9
	1.8	0.4	2.1	0.7	
9	1	2	1	0	
	25	50	25	0	4
	1.2	2.6	1	1	1.4
	0.4	0.7	0.4	0	
>10	24	15	25	4	
	35.3	22	36.8	5.9	68
	28.6	19.7	24.5	18.2	24.4
	8.6	5.4	8.9	1.5	
Column	84	76	102	22	284
Totals	29.6	26.8	35.9	7.7	100

APPENDIX 11
CROSSTABS
Frequency of OPC Use X Satisfaction with DPAS
(Y Axis) (X Axis)

Number Row% Column Total %	Very Dissat	Dissat	Satisf	Very Satisf	Row Totals
0	1	1	2	0	
	25	25	50	0	4
	2	2.2	3.8	0	1.6
	0.4	0.4	0.8	0	
1	5	1	2	9	
	29.4	5.9	11.8	52.9	17
	10.2	2.2	3.8	9.4	7
	2.1	0.4	0.8	3.7	
2	2	6	5	14	
	7.4	22.2	18.5	51.9	27
	4.1	13	9.6	14.6	11.1
	0.8	2.5	2.1	5.8	
3	3	6	8	16	
	9.1	18.2	24.2	48.5	33
	6.1	13	15.4	16.7	13.6
	1.2	2.5	3.3	6.6	
4	5	7	7	4	
	21.7	30.4	30.4	17.4	23
	10.2	15.2	13.5	4.2	9.5
	2.1	2.9	2.9	1.6	
5	5	6	2	9	
	22.7	27.3	9.1	40.9	22
	10.2	13	3.8	9.4	9.1
	2.1	2.5	0.8	3.7	
6	11	6	5	12	
	32.4	17.6	14.7	35.3	34
	22.4	13	9.6	12.5	14
	4.5	2.5	2.1	4.9	
7	1	1	1	3	
	16.7	16.7	16.7	50	6
	2	2.2	1.9	3.1	2.5
	0.4	0.4	0.4	1.2	

8	0	1	5	6	
	0	8.3	41.7	50	12
	0	2.2	9.6	6.3	4.9
	0	0.4	2.1	2.5	
9	2	0	1	0	
	66.7	0	33.3	0	3
	4.1	0	1.9	0	1.2
	0.8	0	0.4	0	
>10	14	11	14	23	
	22.6	17.7	22.6	37.1	62
	28.6	23.9	26.9	24.0	25.4
	5.7	4.4	5.6	9.4	
Column	49	46	52	96	243
Totals	20.2	18.9	21.4	39.5	100

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